JULY 10, 1924

THE RUBBER AGE

VOL. XV. NO. 7

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THE RUBBER AGE

The Only Twice-a-Month Rubber Publication

VOL. XV. JULY 10, 1924 No. 7

MAY RUBBER EXPORTS SHOW GOOD INCREASE

Exceeded only by Two Months Since Boom of 1920—Heavier Exports of Tires, Belting, Soles and Heels—Mechanicals as a Whole Satisfactory.

The value of rubber goods exported in May, 1924, has been exceeded in only two months, March and April 1923, since the close of the boom period in 1920. Features of the May export trade were heavier shipments of automobile casings and other tires, rubber belting exports exceeded only in one previous month, and record breaking shipments of rubber soles and heels, which combined with the continued activity in other lines resulted in total shipments of rubber products valued at $3,669,432 as compared with $3,431,676 in May 1923. For each previous month of 1924, the total value of exports has been less than in the corresponding month of 1923; owing to the depressed conditions in the tire trade. Present indications point to recovery in this trade.

Steady Improvement in Tire Business

The value of May exports of tires and tire sundries increased $226,824 above April, the May total being $2,113,602. The number of automobile casings exported, 125,120, though less than in any one of the first six months of 1923, was greater than for any subsequent month. From June to December 1923, tire exports declined steadily, but every one of the first five months of 1924 has witnessed increased shipments. The seasonal trend of the export tire trade would partly account for this, but a weighty factor is the tire price increase made effective during March and April in a wide range of foreign markets by European competitors, perhaps marking the end of downward price revisions which have been the tendency since 1921, and certainly giving at least temporary encouragement to American tire exporters. During the first three months of 1924 the average unit value per automobile casing exported was about $11.60; in April it was $12.40 and in May $12.58. A similar tendency is evident in the trade in inner tubes, prices in the first quarter averaging about $1.75 per tube as compared with $2.01 in April and $1.98 in May. Each class of tires enjoyed increased trade in May as compared with April, and in the class of solid tires other than for automobiles, the exports which amounted to 169,753 pounds have been exceeded in only one month since the beginning of 1923, 180,078 pounds having been exported in March, 1923. Exports of rubber accessories and repair materials for tires amounted to 113,072 pounds in May as compared with 116,523 pounds in April, 1924, the record month.

Principal Foreign Markets for Tires

A wide range of foreign markets participated in the increased purchases of American tires during May. England was the largest customer, taking 20,482, followed by Japan with 9,440. Following Japan in order come Cuba, Australia, Sweden, Canada, the Philippine Islands, Mexico, New Zealand, and Argentina, each taking from 6,000 to 8,000; Denmark British South Africa and the Straits Settlements from 3,000 to 5,000, and eleven other countries from 1,000 to 3,000 each. Cuba was the leading market for inner tubes with 17,241, followed by England, Japan, Mexico, Sweden, the Philippine Islands, Denmark and Argentina, each with more than 4,000. Shipments of tire repair materials went chiefly to the following countries: Canada, 20,591 pounds; Cuba, 12,475 pounds; Argentina, 11,197; England, 9,501; British South Africa, the Philippine Islands, Australia and Japan, each from 6,000 to 7,000 pounds; and Mexico, British India and Sweden with amounts in excess of 3,000 pounds.

Mechanical rubber goods exports as a whole were satisfactory during the month, and the exports of rubber belting, 374,775 pounds, were particularly heavy,

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RUBBER HATS NOW!

Rubber bowler hats will soon be in vogue, if the London correspondent of the *Times* of Ceylon is not on a false scent. The bowler hat is very popular in London among certain classes and the advent of the rubber article will no doubt put the felt variety on the shelf as the rubber one will not be squashable and in addition it will be water proof. It is claimed that the rubber hats are very similar to the felt varieties, and if the assertion is true it will soon be hard to distinguish between the two.

DUNLOP REFINANCING BLOCKED BY PARENT

Opposition of Tire Company Owning Two-Thirds of Preference Shares Obstructs Plan to Write Off $60,000,000 of Capital —Parent Founded Dunlop.

(Special to THE RUBBER AGE*)*

A surprise was sprung on shareholders in the Dunlop Rubber Co., Ltd., at the ordinary general meeting in London today, when Sir Eric Geddes (formerly British Minister of Transport), chairman of the company, announced that the scheme for writing off £12,500,000 (about $60,000,000) of capital was not to proceed owing to opposition of the Parent Tire Co.

After the report and balance sheets had been adopted, Sir Eric Geddes made his unexpected announcement about the reconstruction scheme under which ordinary shareholders would be asked to write down the nominal value of their shares to 6s. 8d. (about 80 cents) the preference shareholders to surrender their contingent rights to additional dividend, and the holders of "C" preference shares to consent to a reduction of their nominal capital with a consequent adjustment of the dividend rate. It had been hoped to reach agreement with the Parent Tire Co., but in the discussion which had taken place the directors were pressed for further modification to which they could not agree. As the Parent Tire Co., which claimed to own about two-thirds of the "C" preference shares, had power to block the whole scheme, the Board therefore did not ask the shareholders to go through what would have been a farcial procedure. They asked support in arranging a conference of all classes of shareholders at which it might be possible to prepare a plan which would find general approval.

Sir Arthur du Cros, representing the Parent Tire Company, said he had no desire to jeopardize any scheme which affected so many, but he desired to justify the attitude of his company. The Parent Tire Co. were really the founders of the present Dunlop Co. Under the scheme the Parent Company was asked to make too big a sacrifice. Sir Arthur du Cros, on behalf of Parent, is prepared to submit an alternative scheme.

As a result of the discussion no

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MAY RUBBER EXPORTS SHOW GOOD INCREASE

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exceeding the total for any previous month except May, 1923, when 385,175 pounds were exported. A preliminary examination of belting trade statistics for the principal manufacturing countries indicate that in 1923 exports of rubber belting from all countries increased over 26 per cent as compared with 1922; the United States exports increased over 37 per cent in 1923 as compared with 1922, showing that American exporters secured a satisfactory share of the increased trade. Exports of other belting from all countries for which statistics are available increased less than 20 per cent in 1923 as compared with 1922, indicating a more rapidly growing demand for rubber belting than for the other types.

The principal markets for the May rubber belting shipments were Mexico 67,174 pounds, Chile 62,926, British South Africa 45,154; Australia 28,550 and Canada 20,220 pounds. Following these, England, the Philippine Islands, Germany, Brazil, Dutch Guiana, and Argentina each took over 10,000 pounds; the shipments to Germany and Dutch Guiana are especially noteworthy. Cuba, Peru, the Netherlands, and Guatemala each took more than 4,000 pounds. Exports of hose amounted to 354,692 pounds valued at $146,959 and of packing to 136,844 pounds valued at $65,489. The value per pound of rubber hose exports was $0.414 and of rubber packing $0.479, as compared with $0.372 and $0.427 respectively in the preceding month.

Footwear Exports Large Considering Season

The dull period in exports of rubber boots and shoes continued during May though business was fairly good considering the season. Rubber boots to the amount of 15,280 pairs were exported, and 64,536 pairs of rubber shoes, the leading markets for the latter being England, Cuba, Austria, China, Brazil, Argentina and Sweden. The Austrian trade amounted to 8,316 pairs while China took 6,522 pairs, and Brazil 4,685 pairs. Other good markets during the month were Panama, Uruguay, Japan, Iceland, Australia, Mexico, and Guatemala. In order to maintain sales during the dull period, particular attention should be given to markets buying during this season.

Exports of canvas rubber soled shoes amounted to 261,704 pairs valued at $216,952, with Cuba and Mexico the outstanding markets. Fair shipments were made to those countries which are regular customers for this class of footwear, though England and Argentina are much less important markets than last year. Worth-while business was done with Canada, British India and the Dutch West Indies during the month; it is possible that the British Indian market may develop notably.

Very heavy takings of rubber heels and soles by Mexico, amounting to 90,718 pounds, constituted the principal factor in breaking the high record for exports of these articles which was made in April. The total May exports amounted to 257,768 pounds. The Philippine Islands with 48,667 pounds, and Cuba with 21,258 pounds, ranked second and third among leading markets. Argentina and England each took over 18,000 pounds; Canada and Colombia over 10,000 pounds; and Venezuela, Newfoundland, Guatemala and Costa Rica over 3,000 pounds.

Trade in Toys and Sundries Brisk

Shipments of rubber toys, balls and balloons continued to increase during May, each month of this year having resulted in an increase over the preceding month. The value of the May exports was $90,734; England, Canada, the Netherlands, Cuba, Scotland, Mexico and Sweden being the markets with purchases in excess of $2,000. Exports of bathing caps declined from 20,441 dozen in April to 17,157 dozen in May, the value per dozen remaining stationary at $1.67. Water bottles and syringes to the number of 13,867 were shipped chiefly to Cuba, France, Argentina, Italy, England, the Philippine Islands, Mexico, Canada, British India, British South Africa, Uruguay and Venezuela. Other druggists' rubber sundries were exported to the value of $68,533. The total value of hard rubber goods exported was $71,483, of which Canada took $23,298, England $16,605, Japan $5,275, and France, Venezuela, Switzerland, Australia, the Philippine Islands, Brazil and Costa Rica each in excess of $1,000.

Mohawk Resumes Dividends

Dividends were resumed on stock of the Mohawk Rubber Co., Akron, Ohio while the annual sales convention of the company was being held from June 18 to 20 at the Portage Hotel. Spirit ran high when a regular dividend of $1.75 was declared on the preferred stock for the quarter ending June 30, 1924. An additional 25 cents per share also was declared to apply on the 5¼ per cent of accumulated back dividends.

M. E. Mason, vice president and general manager of the Mohawk Rubber Co., reported a decided improvement in this year's tire business and stated that enough orders were on hand to keep the factory operating on full time for a considerable period. Mohawk tires are among the highest quality tires produced in Akron, and it is the avowed intention of the company to continue quality production.

The appointment of H. H. McCloskey as comptroller of the Mohawk Rubber Co. was also announced. Mr. McCloskey was for 22 years with the Goodyear Tire & Rubber Company and served as assistant treasurer up to the time of the reorganization of that company.

Loewenthal Leases Warehouse

The Loewenthal Rubber Co., Akron, Ohio, recently leased a warehouse in Jersey City, N. J. The property consists of a two-story building on a plot having a frontage of 200 feet. It is said to be one of the most valuable industrial sites in Jersey City and is valued at $200,000.

DUNLOP REFINANCING BLOCKED BY PARENT

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resolution of reconstruction was passed, but a committee representing different classes of shareholders was appointed to call each class of shareholders together, with a view to getting an agreed scheme.

Before dealing with the reconstruction proposals, Sir Eric Geddes moved the adoption of the report and balance-sheet. Last January he made a forecast of over $5,000,000 profit, after payment of debenture interest, for the 18 months ended December last. This, however, has been considerably exceeded, the total net trading profit being approximately $7,500,000. This profit does not take into account the initial deficit on the American company for last year, which was $1,900,000. This includes the payment of bond interest and certain no-recurring charges.

"When deciding to commence to operate the American company," said Sir Eric Geddes, "we contemplated having to face deficiencies in the early years, but if present progress is maintained the deficiencies will be for far shorter periods than was contemplated. The factory is making tires of the highest quality; its sales are steadily increasing, and the board is confirmed by these facts in its opinion that the policy of preserving with this development will in the end be justified. We are keeping in closest touch with the American company. Sir Guy Granet, who has just returned from United States, reports to us personally that the quality of our product stands high, and the reputation of the company is increasing. I have for some time been obliged to delay my periodical visits there, but have now arranged to sail on June 21 in order to keep in touch with the American board, of which I am chairman."

An instance of the English company's growing popularity was furnished by a census taken at the famous Derby race meeting at the beginning of June. Out of a total of some 16,000 tires inspected nearly 50 per cent were of the company's manufacture, the remainder being spread over 51 different makes.

During the last 18 months there has been a loss of $50,000 on the German company, but at present the company is operating satisfactorily and, according to Sir Eric, will soon be a commercial success.

Howe to Resume Operations

According to George M. Griffith, new president of the Howe Rubber Corp., New Brunswick, N. J., plans are now being perfected for the resumption of manufacture. No attempt will be made to install new machinery for the manufacture of balloon tires. The cost accounting system formerly in use has been so simplified that it has been found possible to dispense with the services of a number of office workers.

The resignation of H. M. Kerr as secretary and treasurer was accepted by the directors at a recent meeting. No successor has yet been named.

"KEDS" ADVERTISING CAMPAIGN A BIG ONE

Large Space in Many Media throughout Country Used to Stimulate Sale of United States Rubber Products—Combined Circulation of Media 140,000,000.

The 1924 advertising campaign of the United States Rubber Co. for one of its most popular products "Keds," will soon be at its peak. It began in May with full pages in the *Saturday Evening Post*, will reach its peak in August but continues in a lesser degree to the end of the year.

A variety of popular media are being used, including magazines intended primarily for adults, such as the *Saturday Evening Post*, *Popular Mechanics*, and those read by children such as the *American Boy*, *Boy's Life*, the *Youth's Companion*, *St. Nicholas*, *American Girl*, *Everygirl's Magazine*, etc. One association magazine is used, *Association Men*, the organ of the Y.M.C.A. In addition, one or more newspapers in 36 States are being used to point out the good qualities of Keds. The combined circulation of these media is 140,000,000. Seventy-six of America's leading city daily newspapers, the rotogravure sections of the *New York Times*, *New York World*, and *Chicago Tribune* and 14 Sunday newspapers where colored supplements are included in the schedule of insertions.

In each advertisement "Keds" are illustrated as a complete line of canvas rubber-soled shoes for all outdoor wear. The prices, which range from $1.25 to $4.50, are also featured to prove that in addition to their quality, Keds are economical. Another feature, which is attracting attention to the advertisements, is the fact that graphic sport scenes showing Keds in action are a part of each advertisement. The merit of Keds is stressed by facts and testimonials about the wearing quality of Keds. The policy of protecting consumers from substitutions is stressed in the line, "They are not Keds unless the name Keds is on the sole."

This 1924 Keds campaign of the United States Rubber Co. is probably the largest and most complete of its kind ever attempted by a rubber company. The "copy" is well-handled and each Keds advertisement, due to the efforts that have been expended to secure eye-catching layouts, compels attention. Art work used is of a high grade.

N. G. Adair Joins M.A.M.A.

Neal G. Adair joined the staff of the Motor and Accessory Manufacturers Association July 1st, becoming Manager of the Show Department. He will also undertake supervision of the educational and publicity work of the association, according to an announcement by M. L. Heminway, general manager.

Mr. Adair resigned the editorship of *Motor World* late in June. In his new connection he will direct the association's participation in the New York, Chicago and Boston Shows and will be active in the association's contacts with the membership and the industry at large.

Mr. Adair brought to the M. & A. M. A. an eighteen years experience in journalism, including daily newspaper work, an editorship on the headquarters staff of the Associated Press, at New York, and five years with the Class Journal Company. For the past four years he has edited *Motor World*, enjoying a wide observation of the trade and a large acquaintance in it and paying special attention to show activities. For several years he has been executive secretary of the National Association of Automobile Show and Association Managers, its members including most of the large city dealer associations which conduct shows.

Fire Damages Aetna Rubber

A fire, the origin of which is unknown, recently destroyed $25,000 in crude rubber in a storehouse of the Aetna Rubber Co., 815 E. 79th St., Cleveland, Ohio. The fire was discovered by one of the 100 night shift employees in the one-story building used both as a storehouse and machine shop. Two alarms were sent in before firemen got the blaze under control.

TO BREAK GROUND SOON FOR SERVUS ADDITION

According to Judson J. Adams, president, ground will be broken within the next few weeks for the three-story addition to the plant of the Servus Rubber Co., Rock Island, Ill. The completion of the building will mean the addition of 240 hands, an increase in production of rubber footwear to 7,500 pairs a day and a payroll increase of approximately $7,000 a week. The new building will be 150 by 80 feet.

The present payroll of the Servus company is about $8,500 a week and 386 workers are employed. Capitalization was recently increased from $1,000,000 to $1,500,000. Five thousand shares of 7 per cent cumulative preferred stock of $100 par value are being issued. Directors recently declared a 3 per cent dividend on the common stock as of June 1 and payable July 15.

Bids in for Bedford Factory

All bids for the erection of the factory of the Bedford Tire & Rubber Co., Bedford, Va., are now in. The lowest of these is $54,675 and when the contract is let, it is believed that it will be awarded to this bidder.

Here's what happens to shoes in vacation time!
The hardest grilling sport shoes ever got
11 National Championships
2 World Championships
Won on Keds!
How the boys in a small New England village help make Keds the largest-wearing sports shoes in the world
Keds

Typical of Keds Advertising

Four of the full-page advertisements used in the campaign of the United States Rubber Co. Note the "action photos" used and the appealing manner in which the shoes are illustrated.

SCHRADER CELEBRATES 80th YEAR IN BUSINESS

Window Displays at Brooklyn Factory Apprise Motorist of the Fact—Displays of Educational as Well as Sales Value—Illustrate Use of Tire Gauge.

This year is the 80th Anniversary of the founding by August Schrader in 1844 of the firm now known internationally as A. Schrader's Son, Inc. makers of pneumatic valves.

The Schrader Company took advantage of this fact in designing one of the most attractive window displays motorists have seen recently. The complete display takes up two large windows of the Schrader plant at one of the busiest corners in Brooklyn, the intersection of Atlantic and Vanderbilt Avenues.

In one window the background is a large colored cut-out showing a schoolroom scene. On a blackboard are the words, "Experience is the best teacher." In the foreground is the statement that "As makers of pneumatic valves, A. Schrader's Son, Inc. have 80 years of experience."

In the center of the entire display is an attractively colored enlargement of a current *Saturday Evening Post* advertisement. This particular advertisement also ties up with the Schrader Anniversary. It tells how in 1844; the year in which August Schrader founded the Schrader business, President Tyler rode through the streets of New York City in a horse-drawn carriage. It then contrasts the carriage with the automobile of today and describes the part of the Schrader Company in the growth of the automobile industry.

This advertisement is on an easel so that the passerby can easily read it. As new advertisements appear they will be enlarged, colored and placed in the window.

Next to the easel is a popular make of tire in which Schrader tire valves are used as standard equipment. With it is shown a large card which tells the make of tire, sizes in which it can be obtained, etc. Other makes of tires will be shown later.

The third part of the display shows graphically the story of the Schrader tire gauge and its use. It shows a roadside scene with two motorists testing tires. One is kicking a tire; the other holds up a Schrader gauge and warns the first motorist not to guess about air but to use a Schrader tire gauge. This scene is on a giant colored cardboard cut-out.

Around the large cut-outs and in the foreground are grouped Schrader tire valves, tire valve parts and accessories, tire gauges and several display containers known as Schrader Silent Salesmen and used in thousands of stores throughout the country as cabinets for stocking valve parts and accessories.

Engineers Visit Plants

As a feature of the recent Cleveland convention of the American Society of Mechanical Engineers, 225 members made a trip to inspect Akron rubber plants. The members were divided into groups; some visited Firestone, others Goodrich and some Goodyear.

The engineers dined at the Portage Hotel where R. R. Jones, chief engineer of the Firestone Tire & Rubber Co., as toastmaster introduced the following speakers: Dean Fred E. Ayer of Akron University; Fred R. Low, editor of *Power*; ex-Governor James Hartness of Vermont; and Dean D. S. Kimball of Cornell University.

Glaspy Joins Polson Rubber

John Glaspy has joined the sales force of the Polson Rubber Co., Garretsville, Ohio. He will devote his entire time to the sale of the McWade Automatically Sealed Tube in the territory east of the Mississippi river. Acting in the capacity of a trustee, Mr. Glaspy settled up the affairs of the defunct McWade Tire & Rubber Co. last summer.

Ravenna Rubber Products Sold

W. A. Lyons, representing the stockholders, bought the factory, buildings and equipment of the Ravenna Rubber Products Co., Ravenna, Ohio, for $14,000 at a recent receiver's sale.

T. R. SHEPARD MANAGER OF LAMBERTVILLE CO.

W. A. Minott, vice president of the Lambertville Rubber Company, Lambertville, N. J. announces the appointment by the board of directors of Thomas R. Shepard as general manager of the company. This appointment marks the close of two years of management of the Lambertville Company by the Stevenson Corporation, New York City, and resumption of active production control by the financial powers controlling a majority interest in the stock of the organization.

During the two years in which C. E. Murray, acting for the Stevenson Corporation, has served as general manager, the factory has more than doubled its output, greatly modernized its mechanical equipment, shortened manufacturing processes and eliminated a number of side lines which were unprofitable. The company plans to continue its present policy under the new management, with no changes in the operating personnel; adhering to the manufacture of high grade rubber boots, light gum shoes and tennis and similar wear. The plant is operating five days a week on full force, with Saturdays reserved for putting through "extra tickets" to care for special and rush orders—engaging a fair portion of the entire plant the full six days.

F. E. Blackwell, formerly in charge of the receiving department has been made purchasing agent to succeed L. Kline, resigned.

Erie Rubber Doubles Force

The Erie Rubber Corp., Sandusky, Ohio, recently doubled its force of tire builders and is now operating on a 16-hour basis in two shifts of 8 hours. H. B. Greenlee, president, and J. N. Dine, sales manager, recently returned to Sandusky from a business trip during which they were successful in closing contracts that made increased production necessary. It is said that the Erie company is producing an interchangeable balloon tire that can be applied to any rim, a development which is likely to prove popular.

Window Displays Were a Feature of A. Schrader's Son 80th Anniversary

RUBBER ASSOCIATION ACTIVITIES IN JUNE

Results of Campaign to Standardize Size of Garden Hose Gratifying—Various Divisions and Sections Discuss Problems—Additional Balloon Sizes Recommended.

The Association's Executive Committee met at the Lotos Club, New York City, on June 6th and matters of a routine nature were given attention.

* * *

The Solid and Pneumatic Sections of the Truck Tire Committee met at the New York Athletic Club, New York City, on June 17th. The Committee recommended that certain sizes of solid and cushion tires for motor vehicles be eliminated. The recommendations, however, do not affect tractor and industrial truck tire sizes.

Consideration was given to the desirability of revising the Standard Tire Warranty now applicable to solid and cushion tires, to make it correspond to the new 90 day Warranty covering all pneumatic tires, but no final decision was reached.

The Committee gave attention to the practice of some truck and bus manufacturers in equipping with inadequate pneumatic tires and rims and the desirability of undertaking, in collaboration with the Original Equipment Committee of the Tire Manufacturers Division, educational work among such manufacturers to correct this undesirable practice.

* * *

On June 18th the Tire Executive Committee held its regular monthly meeting at the Lotos Club, New York City.

The following additional balloon tire sizes and markings were recommended as standard practice for the industry: 33 x 6.00" (6/21) for 31 x 5 rim; 30 x 4.75 (4.75/21) for 29 x 4 rim; 31 x 4.40 cincher balloon tire.

* * *

The Specification Committee of the Mechanical Rubber Goods Manufacturers Division of the Association met in Akron on June 18th and discussed the requirements of a number of the specifications issued by individual railroads and Governmental departments.

The most important action taken was the adoption, jointly, with a Committee representing the Brass Hose Fittings Mfgrs. Association, of standard sizes and types of couplings for rubber hose commonly purchased by the Government, which will be recommended to the Federal Specifications Board, at Washington, for approval.

* * *

The Mechanical Rubber Goods Mfgrs. Division is experiencing gratifying success in its efforts, through the medium of paid advertisements in the hardware trade papers, to effect the standard use of the 5/8" size of garden hose, with the ultimate elimination of the 1/2" and 3/4" hose for such purposes.

Of 920 responses received from hardware jobbers throughout the country, only 13 of them express in any way disapproval of the plan. Of that thirteen, seven outline reasons why they believe they need the other sizes in their particular localities. The remaining six state they are not in favor of the plan. This practically unanimous endorsement, with the approval of the National Retail Hardware Association and the National Hardware Association, the dealers and jobbers organizations, respectively, is most gratifying, and should be of material assistance to the manufacturers in making the plan a success.

For years, considerable trouble and expense has been caused to the mechanical goods manufacturers by demands of purchasers, who buy according to their own detail specifications, for samples of the products covered by those requirements.

The Mechanical Rubber Goods Manufacturers Division has adopted a recommendation that no samples be furnished on such orders. This policy is strengthened by the recent action of the Federal Purchasing Board, at Washington, in approving that principle.

* * *

The Toy Balloon Manufacturers Section of the Rubber Sundries Manufacturers Division held a regular meeting at the Wooster Country Club, Wooster, Ohio, on June 19th. A report was rendered by the sub-committee of the Section, collaborating with the Association's Accounting Department in the formulation of uniform cost accounting fundamentals for toy balloon manufacturers. It is expected that final consideration will be given this matter at the next meeting, which is to be held in Ravenna, Ohio, in September.

Thought is being given by the Rubber Sundries Manufacturers Division to some co-operative educational publicity work on the use of rubber goods in the home. It is expected that some definite action will be taken on this matter in the near future.

* * *

The Foreign Trade Division of the Association has just begun a campaign to bring about the use of the new domestic 90-day warranty in Cuba, Porto Rico, Jamaica, the Philippines, and in England. The tire adjustment privilege has been

(Continued on Page 254)

78 PER CENT RUBBER IN AVERAGE TIRE

Although the quantities of the various materials in tires vary according to the size and the brand, an average of standard makes in a common size shows the following proportions: Rubber, 78 per cent; cord or other fabric, 16 per cent; and bead wire, 6 per cent. If the amount of cord required for the manufacture of a single 32 x 4 tire was strung out, it would cover a distance of about 2.20 miles.

In a 32 x 4 cord tire of standard make there are approximately 18 pounds of rubber compound 3.75 pounds of cord; and 1.6 pounds of steel wire in the beads, making a total weight of slightly more than 23 pounds.

BRITISH RUBBER TRADE GOVERNED BY CAUTION

Belief that Stevenson Plan has Failed is Prevalent—Much Rubber Produced by Natives in Dutch Colonies Escapes Payment of Duty because of Classification.

(Special to THE RUBBER AGE*)*

Current happenings in the London rubber trade have taught all concerned to be cautious, and one may live in Mincing Lane these days without getting a single expression of opinion as to the possible course of events. The idea seems prevalent, however, that the Stevenson scheme for the restriction of exports has failed in its purpose so far as the maintenance of prices is concerned. A few days ago the suggestion that the scheme might be abandoned did not receive much support, but the belief is now gaining ground that this may possibly be done.

The principles underlying the proposed central selling agency now have the support of important sections of the trade, which have been influenced by reports that Dutch producers are more inclined toward a scheme of this sort than they were to the restriction of output. At any rate it is certain that rubber cannot be profitably produced at the present price of 20 cents a pound, to which point it has dropped despite the Stevenson restriction scheme. Some modification of this scheme appears inevitable.

A recent communication to the Dutch Press by Dr. Broersma contains some interesting comments upon native production in the Dutch colonies, the unwelcome expansion in which has proved so disturbing a factor in the situation. Criticism is directed to the fact that rubber from the Djambi district which contributes no small portion to the output, escapes payment of duty. This results from the classification of the product under the heading of plantation. No duty is payable while the value remains under 82½ guilder cents per lb., whereas classification as wild rubber would have entailed a duty of 5 per cent.

Dr. Broersma describes the position as absurd, and urges the desirability of subjecting rubber produced in the district to a reasonable levy. Cultivation appears to be carried on under extremely crude conditions. Forest land selected for planting costs nothing, and after felling the big trees the cheap seedling is planted. Tapping commences after four years, and, regardless of consequences, is conducted with a view to securing the maximum quantity of latex. Estimates place the number of trees at 17,000,000, and exports from Djambi last year reached 17,389,229 kilograms. An increase is anticipated for some little time to come, as the natives have not yet come to the end of the new plantings. Obviously there can be no great future for rubber under such conditions, and it would seem to be only a matter of time before pests and disease appear and deterioration sets in as a result of overtapping.

W. C. STEVENS AND WIFE START ON NOVEL TOUR

Rolling over the hills and through woodlands and dells of the Golden West in a veritable palace on wheels—that is the program outlined for the ensuing six months by W. C. Stevens and his wife, who left their home in Akron, Ohio, recently on their novel auto camping trip.

In a specially-built car, mounted on Firestone 7.30 full-size balloon tires, the tourists will enjoy all the comforts of home, as their equipment provides practically everything required toward making life in the great outdoors a continual round of pleasure.

Mr. Stevens, who is manager of the machine design department of the Firestone Tire & Rubber Co., had this "portable palace" constructed to comply with his every desire, and really there appears to be nothing lacking, even a costly radio of the latest type having been installed to keep the travelers in contact with the last minute news of two hemispheres and in touch with the entertaining musical and other programs transmitted through space.

The specially designed auto illustrated herewith is of standard width, measures eighteen feet from bumper to bumper and is eight feet four inches in height.

A fluffy bed has two mattresses and eiderdown sleeping bags and all windows are screened, providing the desirable supply of fresh air, at the same time barring visitations by mosquitoes and flies.

Among other features of equipment are a built-in chiffonier, a spacious clothes closet, French plate mirrors, refrigerator, gasoline range, 30-gallon gasoline tank, 25-gallon tank for water, lavatory and electric lights.

Mr. Stevens enjoys hunting, and plans to spend considerable time in the mountains of Colorado in search of game. Two to four weeks will be spent in Yellowstone National Park. After several weeks' sojourn in California the return trip will start, and it is the desire of the auto campers to follow the old Santa Fe trail a large part of the distance.

The car, with equipment and provisions, weighs about 5,000 pounds.

Goodyear Certificates Forged

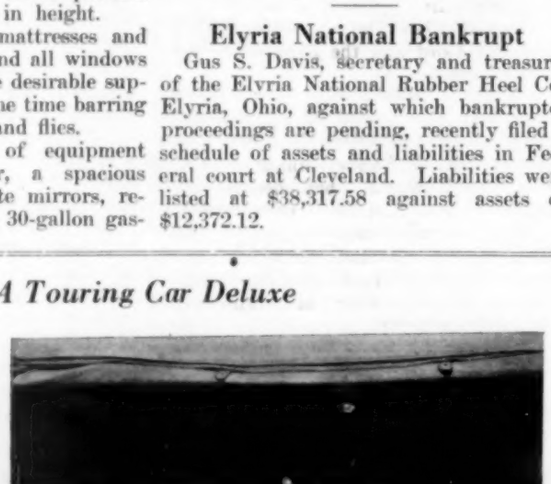
A new form of stock swindling was recently uncovered in Wall Street. It was carried out through changing the numbers of shares represented by certificates of common stock issued by the Goodyear Tire & Rubber Co., listed on the Curb.

One-share certificates, valued at $10, were changed to read "ninety shares" so that each altered certificate would yield the forger a profit of $890. Up to this writing, however, only one certificate thus changed had been reported to Curb Market officials. Upon being notified of the forgery, the Curb issued a warning not only to all members but to Stock Exchange houses and banks as well.

Elyria National Bankrupt

Gus S. Davis, secretary and treasurer of the Elyria National Rubber Heel Co., Elyria, Ohio, against which bankruptcy proceedings are pending, recently filed a schedule of assets and liabilities in Federal court at Cleveland. Liabilities were listed at $38,317.58 against assets of $12,372.12.

A Touring Car Deluxe



The interior. **Notice the comfortable bed and the radio set. All windows are screened.**

H. S. Firestone telling W. C. Stevens to enjoy himself and not to be in a hurry to get back to work.

HOUK RUBBER CO. BUYS TUSCORA FOR $159,006

Sale of the Tuscora Rubber Co. plant and assets to the Houk Rubber Co., of Akron, for $159,006 was confirmed recently by the referee in bankruptcy, H. H. Hostetler. Claims were paid prior to the offer. Proceeds of the sale will be distributed under the referee's orders. The Tuscora company was declared bankrupt by the United States District Court in Cleveland, November 14, 1923.

The property included in the purchase consists of the factory site at Dover, Ohio, buildings, machinery and equipment, seven and a half acres of ground east of the Baltimore & Ohio railroad and 22 building lots. Three appraisers valued the entire property last winter at $212,370.

H. L. Houk is president of the Houk company and J. P. Frisby, vice president in charge of sales. Mr. Houk stated that additions will possibly be made to the present board of directors to include Dover and New Philadelphia men. It was announced that operations will be resumed in from 30 to 60 days as soon as the plant can be reconditioned and various changes made in the equipment. Hard rubber battery boxes and Houk balloon tires will be manufactured in the beginning. Mechanical goods may be added later.

RUBBER ASSOCIATION ACTIVITIES IN JUNE

(Continued from Page 253)

abused in these markets, and the Foreign Trade Division hopes to correct that condition by the introduction of the 90-day warranty.

* * *

The regular monthly meeting of the Hard Rubber Manufacturers Division will be held at the Yale Club, New York City, on June 26th. It is expected that at this meeting final action will be taken respecting minimum quality standards for hard rubber radio sheet.

* * *

On June 30th, the Association distributed to rubber manufacturers, rubber reclaimers and crude rubber importers and dealers, its questionnaire calling for information relative to the rubber industry, during the second quarter of 1924. From the questionnaire, statistics will be compiled showing the average daily number of employees in the industry for the third week of April, 1924; inventory, production and shipments of reclaimed rubber; inventory of scrap rubber and consumption of scrap rubber in the manufacture of reclaimed during the second quarter of 1924; quantity of crude rubber consumed in the manufacture of rubber products, as well as value of shipments of finished products during the second quarter of 1924, and manufacturers' and importers' stocks of crude rubber on hand or afloat for United States ports as of June 30th, 1924. It is expected that the response to the questionnaire will be quite as gratifying as for the first quarter of the year.

CARRIER ENGINEERING CORP. BUYS HUNTER DRY KILN CO.

It was recently announced that the Carrier Engineering Corp., Newark, N. J., has purchased the entire business of the Hunter Dry Kiln Co., Indianapolis, Ind. The purchase includes the patents and good will of the Hunter company. The Carrier Engineering Corp. has been manufacturing the Carrier Ejector System for rubber drying under Hunter process patents for several years.

AZO Stocks at Buffalo

The American Zinc Sales Company of Columbus, Ohio, have opened warehouse stocks of *Azo* products at the Knowlton Warehouse, 93 Perry Street, Buffalo, New York, for the convenience of the trade in this territory.

This stock will be complete at all times, and deliveries to the trade will be effected on and after July 1st.

DeMattia Bros. Expand

DeMattia Bros. of Garfield, N. J., announce the completion of their plans for further expansion of their business.

They will continue to operate the machine shops in Garfield where a full line of tire molds, mechanical molds, machinery, as well as DeMattia Core Chucks are manufactured.

The foundry in Clifton, N. J., will be operated by DeMattia Foundry & Machine Co., where separate offices will be maintained continuing to specialize in grey iron castings.

All organization plans have been completed wherein, controlling interest in each company will continue to be held by Peter DeMattia, and Barthold DeMattia, who will be the executive heads of both companies.

Watson Joins Mitchell-Rand

The Mitchell-Rand Mfg. Co., electrical insulating materials, New York, N. Y., has taken into its sales organization, Edward J. Watson, with residence at Philadelphia. Mr. Watson will call regularly on prospects and customers in Pennsylvania and the South-Eastern States to discuss their problems and suggest the service that the company can render as manufacturers and distributors of "Everything in Insulation."

Lee Offers Free Wheels

In line with the present activities of competitive manufacturers to hasten the general use of low pressure tires, the Lee Tire & Rubber Company announce certain important revisions in their selling plan of balloon tires.

"The stumbling block of motorists otherwise impressed with the balloon tire," says Harry E. Field, general sales manager of the Lee Tire & Rubber Co., "is the extra outlay needed for small diameter wheels without which balloon tire equipment is impossible.

"The Lee Company is now prepared to offer purchasers of Lee balloon tires wooden wheels free of charge. Under this arrangement the tires will be sold in sets of five which will include four wheels and five rims gratis.

"A special inducement is also offered the purchaser of Lee balloon type tires for present rims and wheels. Here again a generous concession will be offered the purchaser of a set of five tires who will receive an inner tube for every tire free of charge.

"Lee branches, distributors and dealers throughout the country are now equipped to sell balloon tires of both types under the plan just stated."

A. A. Garthwaite, treasurer of the Lee Tire & Rubber Co., when asked about the company's business said: "Increasing orders for the past 45 days have necessitated operation at the Lee Tire & Rubber Company plant at Conshohocken, Pa., at full night and day capacity.

"Since the Lee Company secures the bulk of its volume on replacement business the late spring and inclement weather naturally retarded consumer buying. With the coming of automobile weather the Lee factory has struck its accustomed stride and indications point to an outstanding year of business in the Lee line—the Lee DeLuxe Cord, Puncture Proof Cord and the popular priced Invader Cord."

Manhattan to Abandon Fuel Oil

The Manhattan Rubber Manufacturing Co., Passaic, N. J., has decided to abandon oil as a fuel in its power plant. A battery of four huge electrical transformers is being installed on the property recently purchased from Brighton Mills, situated on the corner of Manhattan Ave. and Factory St.

Form Traveler Rubber Syndicate

As a protection for the stockholders of the defunct Traveler Rubber Co., Bethlehem, Pa., the Traveler Rubber Syndicate has been organized at the request of a large number of these stockholders. Its purpose is to buy in the property at bankruptcy sale. Stockholders of the company number 900 and are spread over five states.

The organizers of the syndicate contemplate the manufacture of mechanical rubber goods in addition to tires. None of the officers or directors of the defunct company will have any connection with the new syndicate, it is said. George R. Booth, who has acted as receiver, has been appointed permanent trustee by the District Court for the Eastern District of Pennsylvania.

Goodyear Reduces Liability

The Goodyear Tire & Rubber Co., which gave a chattel mortgage for $30,000,000 in 1921 to the Union Trust Company, Cleveland, has reduced this liability to $25,500,000. The new chattel mortgage was recently filed with County Recorder Ralph J. Wilcox. The law of Ohio requires the re-filing of chattel mortgages every three years.

SUE OAK RUBBER FOR ALLEGED INFRINGEMENT

The Oak Rubber Co., Ravenna, Ohio, is defendant in a suit filed recently in Federal Court at Cleveland by Arthur P. Whitten and George E. Hall. The plaintiffs allege infringement of patent on a method of manufacturing colored rubber articles and ask for an injunction to restrain the Oak company from using this process. The Oak company claims the process had been in use years prior to the issuance of the patent. The item in controversy affects only one of 75 articles manufactured by the Oak company.

L. Leland Quits U. S. Rubber

It was announced in Boston June 30 that Lester Leland, vice-chairman of the Board of Directors of the United States Rubber Co. and its subsidiaries for 32 years, has resigned from all official connection with the company. Although Mr. Leland gave no reason for his action, it was said to be personal.

C-M "Rubber Foam" on Market

Caoutchouc-Mousse "Rubber Foam," a special variety of sponge rubber that has won great success in Belgium and France, is now being imported and has been placed on the market by Nils Ihlen, 209 N. Dearborn St., Chicago. The Belgian R. R. found that this type of sponge rubber was admirably suited for use in cushions because it served as both a heat and shock insulator.

Mr. Ihlen recently sold to the U. S. Navy a number of "Salopette" suits, used by aviators as a protection against cold and rain. These suits, which are lined with "Rubber Foam" weigh only 7 pounds and are said to support a person in the water indefinitely.

To Edit Rubber Inquiry

Dr. W. L. Schurz, American commercial attache in Rio Janeiro and chief of the American crude rubber commission which recently completed a survey of the possibilities of the Amazon valley, sailed recently for New York. He is on his way to Washington where he will edit the commissions report for publication.

Star Rubber Loses Case

The Supreme Court of Ohio has refused to review the case of the Star Rubber Co., Akron, Ohio, against the Waterhouse-Leister Co., Seattle, Wash. The final judgment rendered by the Summit County Court of Appeals stands against the Star company.

Waterhouse-Leister is the selling agent for the Star Rubber Co. and agreed to maintain a fixed selling price decided by the rubber manufacturer. Waterhouse-Leister sued Star for $3,500 damages and the rubber company filed a counter claim for $10,000. A jury in Common Pleas Court gave judgment in favor of the Star Rubber Co. This judgment was reversed in the Court of Appeals.

Rubber Export Firm Organized

The American Rubber Export Co., an Akron firm, capitalized at $10,000, was recently incorporated at Columbus, Ohio. Officers of the company are W. L. Wilkie, N. O. Mather, W. C. Cassidy and O. S. Moles. According to the officers, the company has been formed for the purpose of promoting the sale of rubber goods manufactured in Akron in foreign countries. A central office will be maintained in the rubber city and branch agencies will be opened in the principal cities of all foreign countries.

Aetna Acquires Plant

The Aetna Rubber Co., of Cleveland and Ashtabula, Ohio, recently increased its holdings in Ashtabula by the purchase of the plant of the defunct Davis Can Server Corp.

Improvements are rapidly being made in the Aetna plant, formerly the property of the Silurium Manufacturing Co., and a large mill has been installed. Two small mills are now being operated 24 hours a day. A battery of new presses are to be installed soon. Battery boxes are being produced in quantity on the old Silurium presses. The fire which recently did $25,000 damage to the Cleveland plant had little effect on production, it is said.

Heavy Duty Plans Campaign

Plans for an advertising campaign are now under consideration by the Heavy Duty Apron & Rubber Co., Akron, Ohio. According to L. H. Arenson, the campaign will start in the near future. Newspapers will be the media.

TOO MUCH RUBBER, WAIL BUTTON MANUFACTURERS

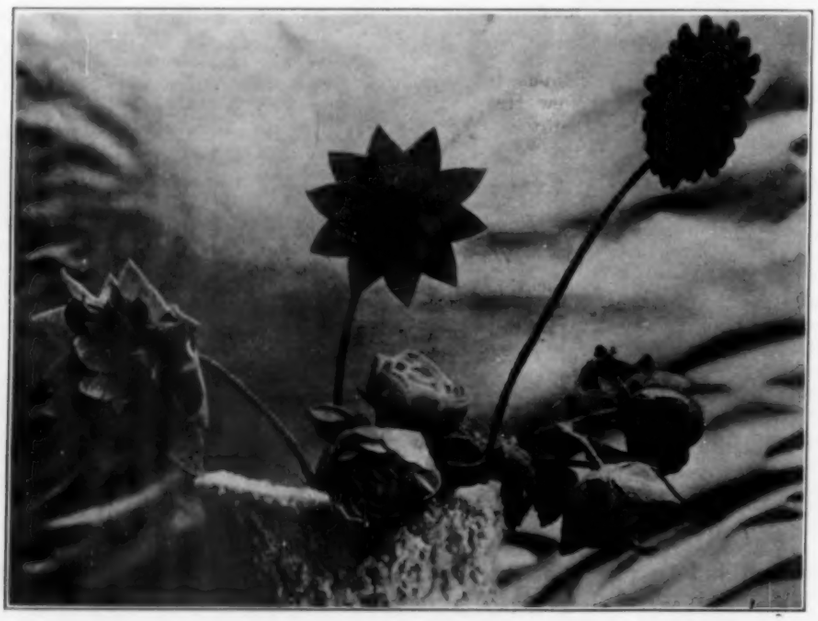
British button manufacturers are in bad straits due to the preference of the ladies for elastic fastenings in lieu of buttons. The choice of the ladies is probably well-founded for they have discovered that elastic is an aid not only to speedy dressing but to comfort. It is reported from London that the sales of one of the big button manufacturers have fallen off $80,000 thus far this year. Ways and means of bringing buttons back into feminine popularity are being pondered.

Receivers Wish to Sell

Gaston Tisne and Charles E. Stokes, receivers for the Bergougnan Rubber Corp., Trenton, N. J. have made application to the United States District Court for the appointment of three appraisors to value the personal property in their hands, consisting of fabric, rubber, shoddy, chemicals, etc. They also ask the Court for an order to authorize the receivers to sell this property at private sale for not less than 75 per cent of the value fixed by the appraisers.

Resigns as Superintendent

Lawrence England has resigned as factory superintendent of the National Tire & Rubber Co., East Palestine, Ohio, and is succeeded by W. E. McCormick, of Akron. Mr. McCormick was at one time identified with the operations of the McGraw Tire & Rubber Co.



Kadel & Herbert

Crepe Rubber Flowers

Among the interesting displays in the Ceylon Section of the British Empire Exhibition at Wembley Park, London, are these artificial flowers made of crepe rubber. The photo shows how closely the form has been copied but it does not do justice to the delicate shades reproduced in rubber.

Masons Retire From Subsidiary

At a recent meeting of directors, the Western Reserve Cotton Mills Co., Kent, Ohio, a subsidiary of the Mason Tire & Rubber Co., was reorganized. As anticipated, O. M. and D. M. Mason retired. O. M. Mason was succeeded by William A. Cluff as president and treasurer. Other officers include J. H. Diehl and H. R. Whitehead, vice presidents, and George Morse, secretary . I. W. McKinnon, a retiring director was succeeded by J. G. Getz. The company operates mills at Quitman and Milne, Ga.

Elect New Board of Directors

The first step in the reorganization of the Mineral Rubber Products Co., Moline, Ill., was taken at a recent meeting of stockholders when the following were named as a new board of directors: A. E. Montgomery, Beder Wood, C. P. Skinner, J. V. Lockhart, J. H. Linden, Henry Langbehn and A. G. Abraham. With the naming of the new directorate, which will soon meet to elect officers, it is expected that operations will be resumed in the near future.

Tennessee Rubber Resumes

The Tennessee Rubber Co., Murfreesboro, Tenn., manufacturers of Easy-on boots and other footwear, which was considerably damaged by fire April 19 last, has rebuilt its plant. Production was resumed recently, according to a statement made by Virgil Moore, in charge of the plant. He added that sufficient workers had been engaged to bring the output up to its former standard.

Storm Damages Ohio Plants

The most disastrous storm that ever visited northern Ohio, which claimed a large toll of lives and property at Lorain, O., Saturday, June 28, made itself felt in the rubber factories of Akron and Barberton. The heaviest rainfall in eight years caused floods which inundated the basements of the plants of the Northern Rubber company and the Sun Rubber Company at Barberton and completely surrounded the larger factory of the Lambert Tire & Rubber company so that work had to be suspended for two days.

Damage to sidewalks and property near the Goodrich and Goodyear factories in Akron was caused by the washing out of sewers, while a loss of $100,000. was sustained by the Hardware & Supply Co. which serves many of the Akron rubber companies. The basement of this company's new building on South High street was flooded for the second time in two weeks. The lower floors of The Miller Rubber Co., farther south on High street also were flooded for several hours, causing a halt in regular work.

Rubber Regenerating Closes

The factory of the Rubber Regenerating Co., Naugatuck, Conn., closed June 22 for the annual inventory. Operations were to be resumed July 7. The company is a subsidiary of the United States Rubber Co.

Rubber Reducing Corsets Being Marketed

New Garments Are Attracting Wide Interest in Both Rubber and Corsets Industries—Over a Million Sold Already According to Reports from all Sections of Country

By **Norman K. Ransom**

(Based on an Investigation Made by THE RUBBER AGE)

A NEW development of absorbing interest to the rubber industry is taking place today—rubber reducing corsets. Since early spring of this year, considerable attention has been given to reducing garments made of all-rubber and rubber and fabric combinations, and already this invention has taken the corset industry by storm and in a comparatively few months has resulted in the sale of about a million garments selling at an average of $10 each. The interest of a number of rubber manufacturers in a product which starts out with such a large sales volume has been such that at the present time there are about ten rubber plants turning out either or both the completed garments and the rubber-fabric material. Many others are known to be investigating the market and there is a likelihood that before many months there will be 30 to 40 rubber plants in the field for this new and profitable item of manufacture.

Outcome as Staple Rubber Product in Doubt

The final outcome of this new garment as a staple rubber product is still a matter for conjecture, but there is little doubt that, if it continues to retain its present popularity in the public's estimation, as it has done in the last five or six weeks, a new outlet will be opened to rubber manufacturers and a large additional business will result.

The resulting affects of this new garment on the sale of regular corsets would not seem on the surface to be entirely beneficial, and while the sale of regular corsets has dropped off to some extent due to the public's eagerness to try out the new reducer, the majority of retailers and manufacturers feel that it will in the end prove to be of material help to the market in the way of a stimulant, for through wide publicity the attention of a great many women has been turned to the wearing of corsets and the correctness of appearance.

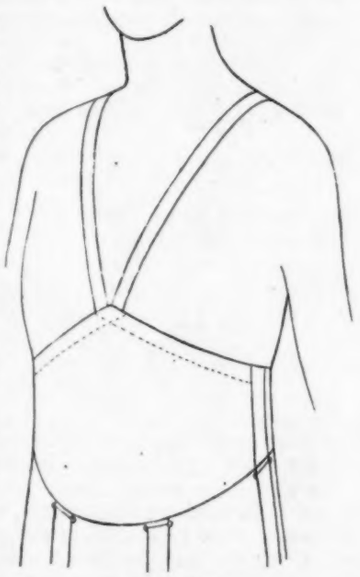
In this connection it is interesting to note that one of the pioneers in this field, the I. B. Kleinert Rubber Company, manufacturers of the "Miracle" Welded Dual Rubber Reducers, has just sent out a circular letter to the corset trade in which it allays the fears of corset retailers by stating that it does not advocate the use of rubber reducing garments as a substitute for regular corsets and that style will never countenance the uncorseted figure for any length of time. The "Miracle" reducer is said to be so constructed that it may be worn with a corset and increase rather than injure corset sales.

In spite of the divergence of opinions among members of the trade as to its merits, a condition which is natural where a new invention becomes an important factor in an industry, sales are reported to be on the increase and undoubtedly will remain so for some time to come.

There are many manufacturers of corsets who believe this rubber girdle to be more of a fad that will die out in the course of a few months than a permanent factor to be reckoned with, but on the other hand there are those who predict a long life for the new garment, and while at the present time there are over a score of different varieties, the opinion is that these will eventually simmer down to a few standard styles with such improvements as will necessarily follow from time to time. Many manufacturers, who are still inclined to be skeptical, are watching results closely before entering this new field but will undoubtedly fall in line before many months elapse, if present sales continue at the rate at which they have been going forward.

As would be expected in the introduction of any new article with the possibilities shown by the new rubber reducing girdle, competition has been exceptionally keen among corset manufacturers, and as a result much litigation is now in progress. The outstanding one of interest to the trade is that now taking place between the makers of the Madame X garment and the manufacturers of girdles of similar design.

The Madame X Co., Inc., is now bringing suits against these houses for infringements on their patent[1] and to recover profits and damages, making the claim that the imitators of its garments have no doubt proceeded upon the theory that it would not be possible for the Madame X Co., Inc. to obtain patent protection for six months or a year, thus eliminating the necessity for payment of royalties to the patentee. To combat this competition the Strouse Corset Co. of New Haven, Conn., as representative of a group of manufacturers, having been advised by counsel that their garments do not in any way infringe upon the Madame X patent, have instituted a test suit in the United States District Court against the Madame X Co., Inc., and their distributors, the Thompson-Barlow Co., in order to obtain an injunction to restrain these parties from engaging in unfair and unwarranted tactics.



Kleinerts "Miracle" Welded Dual Rubber Reducer. Abdomen type

The patent of the Madame X corset covers the invention of a garment of the corset type, the purpose of which is not only to conceal the fat of the waist and abdomen but to also reduce the waist of the wearer by an imperceptible but constant reassage which in turn creates a higher blood circulation that carries away the loosened fat. Another advantage as explained in the patent, of this type of garment over the ordinary stiff laced corset is that it overcomes any possible internal harm and at the same time enables the wearer to achieve a slender figure without the discomfort of being laced in. In addition it helps to strengthen the side and back muscles as well as the vital organs which in the case of many persons of stout stature are inclined to be out of place. Still another advantage in this new garment is noted over the

[1].—U. S. Patent 1,494,086 issued May 13, 1924 to J. A. Weil.

original laced corset. The wearer by means of an adjustable lacing at the back can regulate the tightness or looseness of the garment, and therefore when sufficient reducement has taken place, the girdle can be taken in to conform with the size of the wearer. The stay elements are so constructed as to make it possible for the wearer to sit down without the discomfort of being poked in the back by the stiff stays, as frequently happens in the old type of corset.

The principal of the rubber reducing girdle is to bring about a reduction in the waist and hips by a constant massage which takes place whenever the wearer moves or exercises and also by excessive perspiring which naturally ensues as a result of wearing an air-tight band close to the body. Upon investigation among the various producers, it is found that only one concern recommends that this girdle be worn directly next to the body. The girdle, by thus coming in direct contact with the skin, achieves the desired results in a considerably shorter space of time than is otherwise possible by wearing it over undergarments.

The Madame X Reducing Girdle is Made of the Highest Grade Dry Heat-Cured Rubber

Other manufacturers, however, recommend to their patrons that the girdle be worn over the undergarments in order to avoid any possible chafing or irritation of the skin. For just this reason there are many doctors who look upon the reducing garment with disfavor, stating that when the skin contains an excessive amount of acid constant massaging and perspiration tend to create a serious irritation and in many instances induce lumps and blotches. Reports of suits instigated against corset manufacturers in certain cases where ill effects were received have been heard but not confirmed.

In dealing with the mechanical features of the rubber reducing girdle two distinct types are to be noted; namely, the all rubber girdle and the girdle consisting of fabric and rubber, the latter type being divided into several varieties.

The all rubber garment was first introduced to the public by the I. B. Kleinert Rubber Co., under the trade name of "Miracle." This type consists of pure Ceylon rubber, interwelded for strength, in "gum" color or flesh tint. Next in line is the "Madame X" manufactured by the Madame X Co., Inc. and distributed by the Thompson-Barlow Co., Inc. This garment is similar to the "Miracle" inasmuch as it also is all-rubber but upon inspection one finds that while the rubber in the former is transparent that of the latter is opaque.

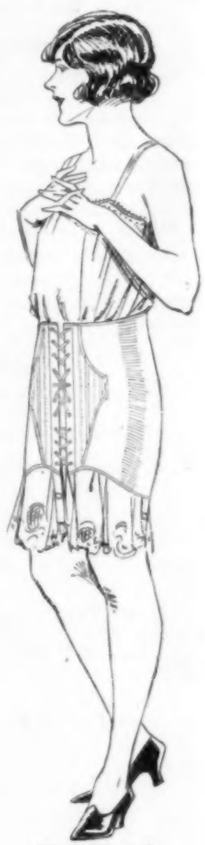
We now come to the rubber and fabric material. The Secretex Rubber Co., formed by Benjamin & Johnes, the H. & W. Co., and the C. R. DeBevoise Co., all of New York City, placed in the market a rubber reducing girdle under the trade name of "Secretex," the material of which consists of a layer of cotton fabric covered on both sides with rubber. The advantages of this variety over the pure rubber article, as explained by its manufacturers, are namely, that it cannot tear or split due to the inner layer of fabric; it has greater durability and strength and can be stitched on a machine and altered as easily as the ordinary corset material.

A variation from this latter type, consisting of a thin layer of rubber covered on both sides with elastic webbing was not considered a success and came in for little interest inasmuch as it showed no appreciable advantages. The next factor in the market to be mentioned is the "Nemolastik" reducing girdle manufactured by the Nemo Hygienic Fashion Institute, N. Y. City. This garment, containing approximately sixty per cent rubber, is considered by some to be a decided improvement of the reducing girdle. "Nemolastik" is a pure gum rubber covered on both sides with Italian silk and laces up the front, thus eliminating the necessity, which is characteristic of the Madame X, of putting the garment over the head in order to place it on the body.

This material will not rip or tear due to the silken covering which in turn prevents any rubber from coming into contact with the body, and contains no disagreeable odor, which many claim the all rubber garment is bound to give off after it has been worn. The last type of garment to be mentioned is the rubber and cotton reducer, consisting of sheet rubber covered on one side with a thin layer of cotton cloth. The advantage featured in this type is that while the cloth gives strength to the garment, the rubber at the same time is free on one side to carry out its reducing qualities.

In all the above mentioned types each one has its advantages and disadvantages and only time will tell which one the public will find suitable to its needs.

Curing the stock for these garments presented a number of new problems to rubber manufacturers on account of the special care required in obtaining a corset that would look attractive, wear well, be odorless, please the sense of touch and at the same time really reduce. Manufacturing operations have now been perfected so that today all of the above requirements have been met and the corset manufacturers are well pleased with the satisfactory solution of these problems.



Nemolastik Rubber Reducing Girdle

Vulcanizing has been limited to the acid cure and the dry heat method, curing in molds or in open steam not being advisable. The acid cure, however, is used only to a very slight extent and the chances are that the dry heat cure will eventually be the only method used. The acid cure is used only for the all-rubber garments and is operated as follows: the stock is milled, sheeted on calenders, cut into patterns and then cured for 30 minutes by the barrell method of tumbling in sulphur chloride.

The dry heat cure is used for both the all-rubber and the rubber and fabric corsets and has been found more satisfactory than the acid cure for all-around results. For the all-rubber corsets, the stock is milled (sulphur, accelerators and colors added), then sheeted to a thickness of about .30 in., cut to shape, placed in pans, surface talced and pans are then put on racks in dry heat vulcanizers and cured for approximately 2 hours or less (including the rise) at 240° F.

The materials used for the rubber and fabric garments are the following varieties: Japanese and Jersey silk, plain and mercerized stockinette, net, satine, brocade. The first three classes are the most popular at this writing on account of the fact that they are materials which stretch with the others in use only to a limited extent. The process of manufacture is as follows: the material is run through a calender and coated with the rubber stock which has been properly milled, then hung over bars in the dry heat vulcanizer and given a cure as above. The thickness of material after vulcanization varies from .025 to .04 in.

This material is delivered in rolls to the corset manufacturers but in the case of the all-rubber garments the rubber manufacturer attaches the garter straps and other fastening devices before vulcanization, thus producing a finished product.[1]

The United States Rubber Co., is at the present time supply-

(Continued on Page 267)

[1] Any rubber manufacturer desiring additional technical information will be given every assistance by writing to the Editor of THE RUBBER AGE.

VULCANIZATION & ACCELERATORS

By Andre Dubosc

PART 1 (*CONTINUED*)

Theory of Vulcanization

Weber Hypotheses in Use Many Years Confirmed by Henricksen and Spence—Arguments For and Against the Ostwald Theory—The Theories of Axelrod, Kirchof, Ostromylensky, Doneth and Erdmann.

IN accordance with that scientist, rubber and sulphur combine chemically to form a series of additional products, of which the lowest member has the chemical formula: $C_{100}H_{100}S$, and the highest member in the series—from the standpoint of percentage of sulphur in the molecule—the chemical formula: $C_{100}H_{100}C_{32}$. The first member of this series corresponds to what is known as soft, pliable rubber, and the last member of the series to the substance, ebonite.

In the many times that Weber experimented in vulcanizing a rubber which contained an excess of sulphur, each time he found by chemical analysis—no matter what the conditions were under which the vulcanizing process was carried out—that the vulcanized product contained a proportion of 32 per cent of sulphur, which corresponds to the chemical formula: $C_{10}H_{16}S_2$.

On the other hand he said that in order to obtain an actual modification of the properties of the crude rubber and be able to change it into soft vulcanized rubber, it was always necessary to obtain a combination of rubber and sulphur which possessed a proportion of two per cent sulphur at a minimum. In this way he obtained the last member of the series which possesses the chemical formula: $C_{100}H_{100}S$.

Weber Theory Used for Many Years

For quite a number of years this theory remained the only one which could explain the phenomenon of the vulcanization of rubber in an understandable, logical and what was considered satisfactory manner. Even to this day a good'y number of chemists and rubber men consider it as the only logical interpretation of the obscure results that are obtained in the vulcanizing process.

Then again, Weber made a certain observation which must be reproduced here.

He worked with a fixed percentage of sulphur and vulcanized at a constant temperature, but he varied the time of the vulcanizing process. Then from the results that he obtained in his experiments, he drew a curve in which the time of vulcanization was taken as the ordinates and the fixed percentages of sulphur as the abscissae. Instead of obtaining a regular curve, he secured a graph which possessed a number of level stretches. This peculiar fact remained unexplained for quite a long time.

The Weber Hypothesis Confirmed

After making several lengthy researches, Henricksen and then Spence confirmed Weber's hypothesis. Spence, in particular, made a series of many experiments of an interesting nature on this subject, and these were very conclusive. He heated mixtures of rubber, which contained 37 per cent of sulphur; then he varied the time of the heating operation within very wide limits. After the vulcanization he determined the free sulphur and the combined sulphur in each individual experiment.

From these experiments he found that, if 21.97 per cent of sulphur was combined with the rubber molecule, the prolonging of the time of heating, as far as it was carried out in these experiments, did not increase the percentage of fixed sulphur in the vulcanized product.

Now the product, which was obtained in this manner, corresponds precisely to that which Weber called the higest member of the series of vulcanized products, and possessed the chemical formula: $C_{10}H_{16}S_2$.

Spence concluded from this result that the theory, which was originally propounded by Weber was correct and that the hypotheses were well founded.

Arguments in Favor of the Ostwald Theory

The theory that has been advanced by Ostwald is based on the principle of adsorption of substances by colloidal materials. According to Ostwald there can be no question of any chemical reaction of any nature whatsoever taking place in the vulcanizing process. According to him the vulcanization of rubber is a physical-chemical phenomenon of adsorption, which is analagous to that of dyeing textiles. In other words there is to be found here, in the vulcanization of rubber, an exemplification of the Witt law.

The principal arguments that Ostwald advances in favor of his theory are summarized in the following:

1. After vulcanization of the rubber, the latter always contains a certain amount of free sulphur; this could not happen if a chemical reaction took place.

2. Weber has supposed that during the course of the vulcanizing process there is formed a series of compounds, composed of sulphur and rubber combining additively; but neither this investigator nor Spence nor any of their collaborators have been able to isolate in a state of absolute purity the two limiting members of the series of compounds that are formed by the union of sulphur and rubber. The colloidal nature of these substances and of the rubber in which the sulphur acts has rendered the ordinary chemical methods of separation and purification inapplicable in this instance.

3. The formation of additive products between rubber and sulphur, which is explained as a chemical process in the Weber theory, can be explained equally as well and as logically by adsorption, which may be characterized as the addition of two substances by a physical process.

4. Sulphur can be isolated by the use of solvents which are specially chosen for this purpose and through prolonged treatment with them.

5 The preliminary mechanical treatment of rubber, its mastication between the mixing rolls, has a sensible influence on the vulcanization of the gum and on the properties of the product that is obtained thereby.

This fact is contrary to what one should expect from chemical combinations.

6. The temperature coefficient, 1.87, which was obtained from the experiments and observations made by Weber, is

rather a closer approach to the thermal coefficient, 1.36, which is calculated in accordance with the adsorption theory than to that which results from a chemical reaction. In accordance with the work done by Van't Hoff, this should be from 2 to 3.05 in the case of a chemical reaction. In connection with this subject, Gibbons has made the observation that this figure (1.87) is really closer to 2 than to 1.36. This is correct. Furthermore the difference between the two figures, which were developed by Van't Hoff, 2 and 3.05, in the case of a chemical reaction, leads one to believe that the figure 1.87 is a rather fair and admissible average figure.

7. The flat portions in the curve, which were drawn and observed by Weber in the graph representing the vulcanization of rubber, and of which it has not been possible to give any logical and plausible explanation, are analagous to those which were observed by Van Bemmelen in the curves that he developed on the adsorption of water by certain mineral substances, as for example, silicic acid.

The Experiments of Stern

8. The results of the experiments that were carried out by Stern, of which we will speak further a little later, correspond rather more to an adsorption reaction than to a chemical reaction. In fact Stern arrived at an equation which has the following form: $\frac{x}{a} = KC^m$

This equation corresponds very well to the typical adsorption equations.

In Stern's equation the symbols have the following meaning.

x is the percentage of absorbed sulphur.

a is the percentage of rubber that enters into the reaction.

C is the percentage of sulphur in the mixture at the start.

m and K are constants.

Among the claims that have been formulated in the course of the exposition of this theory, it must be recognized that the arguments advanced by Ostwald possess certain weight and it can readily be understood that there are a certain number of chemists who are ready to admit that the Ostwald theory is well-founded and substantiated by practical results.

Arguments Against the Ostwald Theory

Spence combats it and in the support of his arguments against the Ostwald theory, he has advanced a number of interesting facts which were obtained as conclusions from a series of experiments which he made and carried out with a most rigorous accuracy. These are given below.

1. There is always a complete union of the sulphur with the rubber molecule. Spence has shown, in fact, that the combination of rubber with the sulphur is a process which proceeds regularly with the time of vulcanization and that this combination goes on to the point at which the weight of the sulphur, that is combined with the rubber molecule, equals the weight of the sulphur, that was used in the reaction in the first place. There was always found at the end of each experiment a small difference between the two weights. But this can easily be explained by the fact that a certain amount of sulphur is lost by volatilization during the vulcanizing process or by the fact the sheet of tin, which surrounds the rubber mass during the vulcanizing process, is sulphurated to a certain degree, entailing a consumption of a definite amount of sulphur.

2. The substance $C_{30}H_{50}S_2$ is always found as the final product of vulcanization of rubber in all the numerous experiments that were carried out.

The Question of Free Sulphur

3. As far as the free rubber that is present in the sample of vulcanized rubber is concerned, that is, before extraction with acetone, this percentage does not correspond exactly to the weight that is obtained in that extraction. According to the view held by Spence on this matter, this leads to the conclusion that the free rubber is partially adsorbed by the rubber gum. The curve that may be drawn from the results obtained in the acetone extraction, moreover, bears a close resemblance to an adsorption curve.

4. In accordance with recent experiments which were carried out with a greater degree of accuracy than was used by Weber in his work, the temperature coefficient was found to be 2.65. This figure corresponds very well indeed with the data that was obtained by Van't Hoff in his research. The latter figures vary between 2 and 3.05.

5. When the results that were obtained in this new series of experiments are employed in drawing a curve, then the graph obtained does not have the level stretches which were first pointed out by Weber. Hence there is no analogy whatever between this curve and the adsorption curves that were obtained by Van Bemmelen.

6. The proportion of sulphur that is combined with the rubber molecule is dependent on and proportional with the time of the vulcanizing operation.

7. There is a stoichiometric relation between the percentage of sulphur that is combined with the rubber and the percentage of bromine which can enter into chemical union with the rubber gum. When a sample of vulcanized rubber is treated with bromine, it loses its sulphur which forms sulphur bromide with the bromine. Another portion of the bromine is substituted for sulphur and combines with the rubber molecule, resulting in the formation of a bromide of dimethyl cyclo-octadiene. The substitution that takes place may be expressed in the following equation: $Br_2 = S$.

The Refutation

In refutation Ostwald has made the following answer to the theory that has been advanced by Spence. He says that Spence, in the work that he did on this subject, did not use a sufficient excess of sulphur in his experiments which rendered the conclusions derived from them inadmissible. He says further that the loss, which is mentioned above, between the initial weights of the sulphur in the rubber mixtures and the weights of sulphur, which is combined with the vulcanized product, although this to be sure was determined to be very small, nevertheless, constitutes serious objection to the chemical combination theory.

The Axelrod or Polymerization Theory

Axelrod considers the vulcanization of rubber to consist of alternate depolymerization and repolymerization of the rubber molecule. In support of this theory of the vulcanization of rubber he cites the following experiment.

He took two samples of rubber which were absolutely alike in every respect. One of these rubber samples was heated for thirty minutes before being vulcanized at a temperature of 120 degrees C; the other sample was allowed to remain at its normal temperature. Both samples of rubber were then vulcanized under identical conditions. The sample of rubber, which had first been heated to a temperature of 120 degrees C, fixed in its molecule 3.07 per cent of sulphur, while the sample of rubber, which had not been heated, fixed only 2.91 per cent of sulphur.

This difference is explained by Axelrod in the following manner. The crude rubber sample, which had not been previously heated, behaved toward sulphur in the manner of an inert body. But it is submitted to preliminary heating at a temperature of 120 degrees C, then it undergoes depolymerization, a fact which is substantiated by the experiments and investigations that were carried out in the laboratory of Delft. Due to the depolymerizing action of heat, the rubber molecule becomes active; then it reacts with sulphur and combines with it. The first compound, that is obtained in this fashion, is inactive, but when subjected to the heat of vulcanization at a temperature of 140 degrees C, a new depolymerization sets in and the rubber molecule becomes active once more and combines with an additional amount of sulphur.

The following diagrammatic arrangement explains in a simple manner the progress of the reactions that occur in the vulcanization process:

Rubber plus heat gives active depolymerized rubber

Active depolymerized rubber plus sulphur gives inert vulcanized rubber

Inert vulcanized rubber plus heat gives vulcanized depolymerized active rubber

Vulcanized depolymerized active rubber plus sulphur gives more completely vulcanized rubber

Axelrod does not say that a chemical reaction takes place when rubber depolymerizes. He simply indicates that each phase of his vulcanization cycle corresponds sensibly to the different stages in the process of vulcanization that were observed by Weber and were manifested in his vulcanization curve.

This explanation is very disputable, as the last experiments that were made by Spence has shown that the flat portions in the vulcanization curve do not actually exist.

The Kirchhof Theory

Kirchhof has evolved a theory of the vulcanization of rubber, which is very much like that which was described by Axelrod, but he has gone into much more detail on the mechanism of the reactions that take place during vulcanization.

He begins by making a determination of the viscosity of a number of solutions of rubber; then he adds to these solutions solutions of chloride of sulphur of known viscosity. Then he measures the viscosity of the mixtures that are finally obtained. What he found was that at the beginning the viscosity diminishes and then that it increases very rapidly with the time. Basing his observation on the principle that the viscosity of a mixture corresponds to the degree of polymerization of the substances that are dissolved and mixed together, he concluded that in the first place a depolymerization of the gum took place, then a repolymerization, the maximum viscosity of the mixture of solutions corresponding to the vulcanization of the rubber.

In the case in which rubber is directly vulcanized with the aid of sulphur, Kirchhof admitted that heat in the first instance depolymerized the gum, while under the influence of the catalytic action of the sulphur, a combination took place, tetramethylene nuclei were formed, and then the sulphur fixed itself on the carbon atoms of these nuclei in such a manner as to form a heterogenous cycle. Thus sulphur itself does accomplish the vulcanization of the rubber molecule. It acts in a catalytic fashion only and polymerization is the dominant result of the vulcanization process.

This explanation of the vulcanization of rubber seems to be one of the most disputable of all, for it does not attempt to explain in any manner whatsoever how it comes about that a certain amount of sulphur is found in vulcanized rubber combined with the rubber substance and is no longer capable of being removed from the rubber by the usual solvents.

The Ostromylensky Theory

This chemist obtained addition products of aromatic hydrocarbons with substances like picric acid. Rubber is an aromatic hydrocarbon, and in accordance with the hypothesis, evolved by Ostromylensky, a similar reaction should take place. He isolated the nitro aromatic derivatives, as compounds which are particularly well-suited for producing addition compounds with the rubber gum. These substances act very effectively as vulcanizing agents, but not exactly in the manner in which Ostromylensky thought that they do, for the materials which form addition products most easily are not good vulcanizing agents just because of this fact.

However the investigator concluded from his experiments that the nitro compounds have a chemical action on the rubber gum. He held that oxygen gas is set free during this reaction, and in support of his theory, he showed by experiment that a substance that easily gives up its oxygen, as for example benzoyl peroxide, is a good vulcanizing agent.

A new fact was evolved from the experiments made by Ostromylensky. Substances, which possess entirely different chemical and physical characteristics, as for example, sulphur, the organic peroxides, the nitro compounds, sulphur chloride, react on the rubber molecule at elevated temperatures and give identical results and all finally result in the vulcanization of the rubber.

It would therefore seem that the properties of the vulcanized rubber are not those of a simple derivative of the gum. Furthermore, when all the former theories of vulcanization of rubber are carefully studied, it may likewise be seen that Ostromylensky has developed a theory of the vulcanization of rubber which is entirely novel and which is divided up into two phases. The first of these is the one in which a chemical reaction, resulting in a combination, takes place, and the second is one in which the physical process of adsorption takes place.

In accordance with this theory of vulcanization the derivatives which are formed by chemical reaction with the rubber molecule act as vulcanizing agents in a physical sense. It is of course possible to prepare the chemical derivatives of the rubber molecule at the outset and then add them directly to the crude rubber. They possess the power of vulcanizing the rubber gum under certain definite thermal conditions.

In addition to various nitro compounds, organic peroxides, sulphur and chloride of sulphur, Ostromylensky also cites among the various substances, that possess the power of vulcanizing rubber, the chlorhydrates and the bromides of rubber, although they have been represented as inert powders.

In summing up it may be said that the really curious theory advanced by Ostromylensky, constitutes a true compromise between the purely chemical theory of the vulcanization of rubber, as propounded by Weber, and the purely physical vulcanization theory as evolved by Ostwald. This is a compromise which appears to approach the truth quite closely.

The Donath Theory

According to the scientist Donath vulcanization of rubber is a process which is quite analogous to the phenomenon of the formation of an alloy. Rubber and sulphur form a series of combinations with each other in definite proportions, and these proportions have a strong modifying action on the physical properties of each of the combinations. This takes place in just the same manner as in the formation of metallic alloys, particularly when one of the metals which forms the alloy is present in a very small percentage.

This theory of vulcanization of rubber, although it is quite seductive, nevertheless appears to be open to considerable discussion and question and it seems that the author of the same based his reasoning purely on ground of analogy. One of the fundamental characteristics of an alloy, which is formed by melting together metals in certain definite proportions, is to give a product which possesses a definite melting temperature. Now it is a fact that vulcanized rubber does not possess a definite fusion temperature. The various grades of vulcanized rubber of different degrees of vulcanization decompose without melting and their decomposition starts to take place at a temperature of 30 degrees C in the fold.

The Erdmann Theory

If melted sulphur is brought up to a temperature of 160 degrees C, it is claimed that there is formed at the same time thiozone and octa-atomic sulphur. Basing his theory on the formula which was developed by Harries, Erdmann claims that the dimethyl cyclo-octadiene in polymerized condition, represented by the following formula: $[C_8H_{10}(CH_3)_2]^n$, which is the principal constituent of virgin rubber, dissolves octa-atomic sulphur $(S_8)^n$ in a polymerized condition. The result is a semi solid solution.

Under the influence of heat, used in the vulcanization process, the molecule of octa-atomic sulphur S_8 dissociates into thiozone S_2 and that same substance. Then the immediate result is that this substance combines with the rubber to form a new chemical compound.

Soft rubber will then be a thiozonide of dimethyl cyclo octadiene and ebonite a polythiozonide. This theory seems to be based on what may be called purely metaphysical speculations rather than on experimental facts. The vulcanization of rubber ordinarily starts at a temperature of 140 to 145 degrees C. How then can it be assumed that thiozone S_2 is formed in the rubber mixture which is being vulcanized, as well as octa-atomic sulphur, when these substances do not form at a temperature lower than 160 degrees C, a temperature at which pyrogenation commences.

Variations in the valency of the sulphur molecule are evidently possible during the course of these reactions. Moreover it is principally on these modifications that the action of accelerators in the vulcanization of rubber is based. On the other hand, from the experimental standpoint they do not take place either under the conditions that have been indicated or assumed by Erdmann nor in the meaning which he appends to them.

In the next installment of this series M. Dubosc discusses the endothermic reaction as a hypothesis to explain vulcanization.—The Editor.

EDITOR'S REVIEW DESK

Trade Catalogs **Books** **Bulletins**

THE CRUDE RUBBER SUPPLY: AN INTERNATIONAL PROBLEM. By Harry N. Whitford. Published in the current issue of *Foreign Affairs*, an American quarterly review.

As Chief of the Crude Rubber Section of the Rubber Division of the United States Department of Commerce, Mr. Whitford is in an excellent position to study the great economical questions presented by rubber since the adoption of control plans. His statements anent the future supply are of particular interest to manufacturers.

A survey of the region where 95 per cent of crude rubber is grown shows that by 1930 the planted area will have a capacity to produce about 600,000 tons per annum. The world consumed 430,000 tons of rubber in 1923. An investigation into the future world demand for rubber recently completed by the Rubber Association of America indicates that by 1930 consumption will exceed production. That a shortage of crude rubber is likely to be felt by 1928 may be indicated by a comparison of the prospective production and consumption for the next few years.

Two problems are involved: First, monopoly control of a basic raw material and second, the possibiilty of a shortage. There are two courses open to meet these problems: New planting and an extension of America's present holdings in the East. As those in the industry know, new planting will have no effect upon the situation during the next seven or eight years because it takes from four to six years to bring the trees into bearing and it is ten years before they approach their full yield.

* * *

EMISSIVE TESTS OF PAINTS FOR DECREASING OR INCREASING HEAT RADIATION FROM SURFACES. Technologic Paper of The Bureau of Standards, No. 254. By W. W. Coblentz, Physicist and C. W. Hughes, Assistant Physicist, Bureau of Standards.

Emissivity tests of aluminum-coated samples consisting of a single fabric backing forming the foundation for an outer coating of rubber composition showed that those with the outside covered with a coating of aluminum paint, emitted only 25 to 30 per cent as much heat radiation from the under side as the uncoated samples. "When the aluminum paint was applied on the under side, the heat emitted was 40 to 45 per cent that of the unpainted sample." Thus, it appears that in manufacturing automobile tops and other fabrics where heat emission is an important consideration, the application of aluminum paint to the smooth outside of the fabric will reduce the heat radiated from the under side from 70 to 75 per cent.

The authors point out that the rubber gas balloon is an excellent example of the importance of reduction of heat in an inclosure. By painting the outside of the balloon fabric with aluminum paint radiation into the interior is reduced to 45 per cent of that of the unpainted fabric.

* * *

AMERICAN BUYERS' GUIDE, 1924-25. Published by the American Chamber of Commerce in Germany, Berlin.

This volume is a classified directory and handbook for American importers and exporters. Although economic and trade conditions in Germany have changed faster during the last year than one could write about them, the Committee on Publication of the American Chamber of Commerce in Germany has gathered together much information that will be found helpful to those who desire to transact business in that country. The organization was formed in 1903 by Americans engaged in business at Berlin. One of its chief tasks, under normal conditions, is that of giving assistance in the introduction of American goods into Germany. Due to the depreciation of currency and other causes much of the Chamber's post war activity has been in the interest of the American importer.

In a division of this volume headed "List of Industries and their Chemical Requirements" a list of chemicals used in the rubber industry is given.

* * *

CATALOG NO. 10. EAGLE RUBBER CO., ASHLAND, OHIO. 40 pp. and cover printed in black and illustrated in colors throughout.

The Eagle Rubber Co., one of the largest manufacturers of toy balloons and rubber toys in the country, is to be complimented on the attractive appearance of their new catalog. Beginning with the manufacture of toy balloons some years ago, the company recently began the manufacture of "Eagle Brand" inflated rubber balls which are already meeting with great popularity. The development of the package idea, they say, is a method of merchandising that has opened up new possibilities for balloon sales the whole year 'round. Items manufactured are illustrated in color and carry a terse description. A compact table at the bottom of the page gives the company's number, the inflated diameter, code designations and shipping and packing information.

* * *

DECK TENNIS BROUGHT TO LAND. Dek Sales Co., 560 Sutter St., San Francisco, Cal. 5″ x 6″.

This little booklet deals with the game of deck tennis, "Dek" courts, nets and quoits. The game is played with "Tenikoit," which has been developed after experiment with both the old style rope quoit and the heavy solid rubber quoit, both of which are dangerous when violently thrown. "Tenikoits" are made of soft,white rubber, of hollow construction. They are flexible and may be crumpled in the same manner as a limp rope quoit. Because they have air vents they are not too lively for fast play. Annular corrugations give a positive grip.

* * *

BROWN AUTOMATIC TEMPERATURE CONTROL. Catalog No. 86 40 pp. 7¾ by 10½. Illustrated throughout with photographs and graphs.

In every process where heat is an important factor, automatic temperature control assures a constant temperature according to a predetermined schedule, thus reducing the human element to a minimum. With automatic control it is possible to maintain boilers at a temperature varying but a few degrees instead of "between 1300 and 1400 degrees F." Especially valuable is some means of automatic temperature control when fuel oil is used.

The various instruments manufactured by the Brown company are well described in Catalog No. 86. Particularly interesting are the comparisons of temperature fluctuations between manual and automatic control shown on charts.

* * *

RUBBER INSULATED WIRE. Bulletin No. 500-2. Standard Underground Cable Co., 17th & Pike Sts., Pittsburgh, Pa. 28 pp illustrated. 6″ x 9″.

Three grades of rubber insulated wire are made by this company. One of these grades is insulated with a compound containing 30% Hevea (either Para or plantation). Wires are finished over the rubber insulation with either one or two cotton braids saturated with weatherproof compounds. Standard rubber insulated wires include a wide variety of types and sizes suitable for all classes of service. Conductors are rolled, drawn and finished in the company's factories at Pittsburgh, Pa., and Perth Amboy, N. J.

The Progress of British Propaganda

Rubber Growers' Association Supporting Central Selling Agency Scheme—Much Work Done to Increase Consumption

(Special Correspondence to THE RUBBER AGE)

A number of interesting features have lately developed in the British rubber trade. A movement for the establishment of a central selling agency has been under discussion. The idea is to secure control of the greater part of the rubber supplies so as to fix prices on a remunerative basis, and it is estimated that a capital of approximately $15,000,000 would be necessary. Opinions as to the feasibility of the scheme are divided, but the Rubber Growers' Association is supporting it. Certain changes to the plan originally proposed have, however, been suggested. Originally it was proposed that the agency should actually buy stocks and hold them for price. Now it is thought that the better way would be for the agency to finance the weaker companies, who would themselves hold the stock off the market until the time was ripe to sell. The alternative has been put up in order to ease the difficulties of raising the capital necessary for the scheme. The larger companies can obviously hold stocks for a considerable time, having ample funds.

The Propaganda Committee of the Rubber Growers' Association and Rubber Roadways, Ltd. is doing good work in the interests of the industry. An interview with the chairman, Sir Stanley Bois, disclosed how energetically the Propaganda Committee has been pushing the consumption of rubber, the chief progress having been made in connection with the crepe sole, which it is believed will more than double the present consumption. The crepe, which is specially rolled on the estate, realizes about 40 cents per lb. on the London market. The chief difficulty encountered by the "New Uses" Committee is, of course, the fact that in the case of nearly all new suggestions, as well as many already existing, the proportion of new rubber used in so-called rubber productions is comparatively small. According to Sir Stanley, the main objective of his Committee is to find new uses which will consume larger quantities of pure rubber. Last year the crepe sole absorbed nearly 3,000 tons which, considering that it is only in its second year, is a great achievement. By means of considerable price reduction, its popularity is rapidly increasing, since it will now compare favorably with the leather sole, added to which it possesses far greater durability. It is now being most favorably received in Continental Europe and the Propaganda Committee has issued circulars to sellers in all European languages.

Rubber Roadways Expected to Develop a Large Outlet

Sir Stanley expressed confidence that rubber roadways will develop a large outlet for rubber now that the early difficulties have been overcome. He does not anticipate any universal adoption of rubber for this purpose, as it will always be more costly than other methods, but with the advantages it gives in withstanding very heavy wear and tear and absence of noise and vibration, he looks forward to the time when it will be very generally used over large stretches in important thoroughfares.

He also attaches considerable importance to the extended use of rubber latex. This is making progress in various directions in preparing cord fabric for tires and various waterproofed fabrics. A new process is being developed—it is not yet on the market—that may lead to a considerable increase in the variety of materials which can be proofed with rubber latex. Rubber has already proved its utility as a lining for tube mills used for grinding metals. It is also being used increasingly for ore and other conveying belts.

A novel method of propaganda is being used by the Rubber Growers' Association, who have compiled a list of names of over 100,000 shareholders in rubber companies. The list is available for advertisers of rubber goods, and shareholders anxious to further the industry are invited to make known to their friends specially attractive rubber goods.

An interview with E. R. Crowther, secretary of the Propaganda Committee, elicited the following interesting information:—"The crepe sole is definitely 'established.' Last year in this country 2,500 tons of plantation rubber were used in sports footwear alone. This year considerable progress has been made in the direction of general footwear. The Army has taken up the matter and the Navy is experimenting. Through the agency of their trade union, postmen in rural districts have been supplied with sample pairs, and in many cases have ordered shoes. The Mount Everest Expedition is being equipped with specially prepared crepe rubber footwear. French and Swiss authorities are actively discussing its adoption."

Work Done to Promote Crepe Sole

Mr. Crowther also told how the Continental market has been prospected. Propaganda was practically confined to this country until last fall, any orders previously received from abroad being entirely the repercussory outcome of publicity in Great Britain. The R.G.A. circularized footwear manufacturers and retailers throughout Europe, and 350,000 folders explaining the crepe sole in twelve different languages were despatched. They brought thousands of replies from Continental traders to whom further circulars explaining how the crepe should be handled have been forwarded. At the recent Brussels Exhibition, striking testimony was forthcoming with regard to the effect of this initial propaganda. One exhibitor who two weeks before had not produced a single crepe rubber shoe was exhibiting the product from his own factory and was unable to cope with the orders received.

However, he regards America as the potential field. It is common knowledge that the crepe sole was first introduced to America via Wimbledon by the agency of the Australian Lawn Tennis (Davis Cup) Team. As the outcome of the demand thus created, one British firm supplied 12,000 pairs of crepe rubber sports shoes to an American store, but when these were sold no repeat orders could be executed owing to the insistent home demand. American rubber manufacturers subsequently developed a considerable trade with an imitation product and the American shoe trade also secured a certain amount of reject crepe from Mincing Lane. As a result of the publicity campaign in this country America was being educated, but was being supplied with an inferior article. When shown the genuine product, manufacturers, retailers and jobbers all immediately realized its great superiority.

"Welfare," Mr. Crowther said 'is a prominent feature in connection with American factories, and upon this ground he based a good deal of propaganda with the slogan: "Put the carpet on the workers' feet." The crepe sole will do away with a lot of that tired feeling between the fatal hours of 3 and 5 p. m. Various organizations interested in the welfare movement have had the advantages of crepe rubber brought to their notice, and this potential market should prove to be extensive.

Much to Mr. Crowther's delight—for he is keenly enthusiastic on continued and cumulative publicity—the Federated Malay States Government has just appropriated from the export duty on rubber, ⅛ cent per lb. for propaganda purposes, placing one-half at the disposal of the London Propaganda Committee for a period of three years. In ad-

dition, the Straits Settlements Government has for the current year granted $20,000 toward the London propaganda funds.

It is hoped that contributions will be made by other rubber producing countries so that the operations of the department may not suffer from insufficiency of funds. While in America, Mr. Crowther advocated a joint publicity campaign by the R.G.A. of London and the Rubber Association of America, the former representing two-thirds of the capital invested in rubber plantations and the latter a similar percentage of consumption of crude rubber. It is hoped that countries outside the restriction scheme will see the advantages and forward voluntary subscriptions.

An Interview with the Southwark Engineer

Another interesting interview was with Arthur Harrison, M.I.C.E., Borough Engineer of Southwark (one of London's largest districts), who has made a close study of rubber paving for many years and who is receiving new suggestions almost daily. His offices in Southwark Town Hall are filled with specimens from the earliest efforts to the most recent suggestions. The progress thus indicated is very apparent, but, as Mr. Harrison emphasizes, the only possible method by which any new idea can be tested is actual experience under everyday conditions of modern road traffic.

Over thirty years ago he first observed an experimental patch of footway paved with rubber, since then he has inspected several attempts at roadway work, but in most cases they have been where there is neither fast nor heavy traffic. In Southwark, however, the traffic is swift, heavy, and concentrated. The first Southwark experiment was made early in 1913. The rubber was in the form of a cap about half an inch thick, having dovetailed projections fitted into grooves in a hard wood block. This rubber, after carrying traffic averaging over 190 tons per yard of street width per hour, was found after nearly two years' test not to have lost anything through wear on the surface, but to have worn considerably underneath, both on the wood and the underside of the rubber.

To overcome the friction against the underside of the rubber a new type of block was produced, in which the rubber was vulcanized on to a steel plate. This was laid in 1920 on the breast of the Borough High Street, on one side of the street car line. Soon after the traffic had bee moving over these blocks several of the rubbers became detached from the steel plates. Within a few months about 15 per cent of the blocks had thus separated from the plates, showing that this type, which had withstood satisfactory works tests, would not succeed under conditions of vast, heavy moving traffic. Although the working tests was not a success, it revealed some surprising results of the behavior of rubber under heavy conditions and supplied sufficient inducement to encourage further developments.

In the new type of block with which this area was relaid in 1921, the steel plate was substituted by a plate of expanded metal, embedded in vulcanite and provided with additional lugs. This has given satisfactory results. Some of the original paving is still in use, although some of the blocks had to be taken up owing to defects that developed in a portion of the concrete foundation. The latest experiment is on 25 yards, the block being entirely of rubber, a top layer of fine rubber resting on a much larger thickness of highly vulcanized rubber, the entire block being 4 inches deep.

Wearing Qualities Proved

Mr. Harrison considers the excellent wearing qualities of rubber proved. He pointed out the entirely new conditions rubber roadways manufacturers would require to meet. Any of the old types of rubber paving will meet all requirements where the traffic is neither fast nor heavy, as in hotel courtyards. He further recalled difficulties encountered in the past with other types of road-making materials. Macadam, wood, and granite setts have all presented their own problems: all were expensive, especially macadam, and required to go through a period of slow development until brought into full use.

In the next twenty years, it is his belief, roads will be cheaper to maintain than during the past twenty years. He does not suggest that rubber will replace wood, granite, or asphalt for general road use, but believes that there are many places where it will be commercially possible and desirable. One of its advantages is the lessened vibration upon adjacent buildings, a subject on which there is much to learn. It is not a question of the amelioration of working conditions for those engaged upon business within, but of that direct consideration of municipal authorities--the assessment value of the buildings. Mr. Harrison instanced cases where absence of vibration would readily double rateable values.

Fordyce Jones, chairman of the Reliance Rubber Co., Ltd., who is well known in the United States, is exceedingly enthusiastic regarding a new invention perfected by his firm, the outcome of a new method for the curing of pure, transparent rubber by a low-temperature heat instead of by immersion in a solution of chloride of sulphur, a highly corrosive and objectionable smelling chemical, like liquid poison gas. The old chloride treatment vulcanizes the outer surface only, leaving deleterious matter in the rubber, and this gradually but inevitably destroys the article prepared by this means. Yet teats and other surgical articles made by this process are in universal use at present in Great Britain! Their use is prohibited by law in France and there is very little demand for them in America owing to the objections voiced by the medical fraternity. Rubber vulcanized by heat has not only all the advantages of the transparent chloride-cured article, but entirely disposes of its disadvantages. It retains all the original features of the rubber, although cured. It is transparent and can be produced in any color by use of aniline dyes. It is certain that uncured rubber has its limitations even for soles, but Mr. Jones maintains that there is a great field for a perfectly vulcanized pure plantation rubber able to withstand climatic and general aging conditions. He was exceedingly confident as to the possibilities opened up by the new invention. He believes that the bottle teat prepared by his firm upon these lines, which is already on the market, will bring into general favor many other rubber goods of similar character. He instanced and exhibited a new hot water bottle, the appearance, sheen and beautiful coloring of which should compel ready sales.

The Future of the Crepe Sole

An interview with O. H. Abbott, director of W. Abbott & Sons, Ltd. one of London's large chains of shoe stores, was illuminative as to the future of the crepe sole. Mr. Abbott was emphatic that the crepe sole had come to stay and that it is not a "flash in the pan." He stated that the public was realizing that the wearing of the 100 per cent pure rubber sole spelt economy in the annual shoe bill, and the public are also its best advertisers, as the satisfaction is so pronounced that every wearer cannot help retailing his experiences to others. He stated that the reason for the success of the crepe rubber sole is chiefly due to its longevity. For the purposes of footwear it was first used for golf shoes, its chief advantages being grip and resiliency and doing away with nails, which are so destructive in the house and noisy on either floor or sidewalk. Golf enthusiasts, however, soon found themselves wearing their shoes off the links, and this created a demand for the crepe sole walking shoe, which is now becoming more popular every day. They can either be left their natural color or dyed black or brown to match the color of the uppers. The rough edge for town wear was objected to by many, but this has been remedied by finishing the crepe with practically a smooth surface. The latest improvement is a semi-leather and crepe sole heel—the crepe being let into the center of the heel—and thus prepared the crepe-soled shoe carries the appearance of an ordinary walking shoe with all the other advantages enumerated. It is undoubtedly the shoe of the future, according to Mr. Abbott. For motorists it is excellent, as the foot cannot slip off the pedal. Tennis shoes with crepe soles will be almost exclusively sold this season.

Boys and girls shoes for school and play are being made with crepe soles in ever increasing numbers. In Paris Abbots have 10 branches, spread over all the principal boulevards, and the demand for crepe soles has caught on with the French people with even greater fervor than in this country. They readily welcome anything in the shape of a novelty.

TECHNICAL ABSTRACTS

Mechanical **Chemical** **Physical**

Action of Sulphuric Acid on Various Rubbers

The transformation that sulphuric acid brings about when permitted to act on different types of rubber is described in an article in *Chemiker Zeitung*, 37, pages 100 to 101. The action of the acid gives different results, dependent on the concentration of the acid employed in the experiment, and the nature of the rubber that is being investigated. When para rubber is treated with sulphuric acid (1.84 specific gravity), the rubber being dissolved first in a solution of benzene, white products are obtained with properties much different from those of the original raw rubber. On the other hand Congo rubber, gutta percha, balata, synthetic rubber (dimethylated) gives reaction products which are still soluble and vulcanizable.

The formula of these products of transformation is given sometimes as $C_{10}H_{18}$ and sometimes as $(C_{10}H_{16})_x$. Halogen addition products are formed from these compounds as follows: $C_{20}H_{30}Br_2$ in the case of para rubber, and $C_{30}H_{46}Br_4$ for the other kinds of rubber. The specific gravity of these products is 1.096 which is greater than that of the original rubber 0.920. Then again during this transformation there is formed a certain quantity of a substance with aldehyde and acid properties, whose formula may be written as $C_{20}H_{30}O_3$. This compound also forms when rubber after vulcanization is oxidized in air.

The molecular weight which is found with the ebullioscope is 415 ($C_{30}H_{46}$ has a molecular weight of 408). These differences show that the formula for para rubber must be that of an open chain, while those of the other forms of rubber must be different. Para rubber is denoted by the formula $(C_{10}H_{17})_2$ and of the other forms of rubber $(C_{10}H_{16})_2$. It is figured out that the other forms of rubber must have a tetramethylene group in their molecule.

Vulcanization with Accelerators

Compositions containing a vulcanizable plastic material, such as rubber, or balata, a vulcanizing agent, and an accelerator, capable of being cured at a low temperature, are prepared by mixing the composition in two separate batches, one of the batches containing sulphur as the vulcanizing agent, and the other containing the accelerator.

The batches are milled separately at higher temperatures than that at which they are subsequently mixed together, and are warmed separately before admixture. The process is especially suitable when rapid accelerators, such as xanthates and dithiocarbamates, are employed. Fillers, such as zinc oxide, may be added either entirely to one of the batches, or the same proportions may be added to the rubber in each of the batches, the latter procedure shortening the time required to convert the batches into a homogeneous mass. British Patent No. 211,524.

Coagulation of Hevea Latex

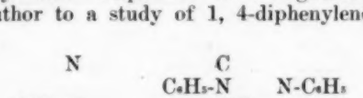
The belief that rubber exists as such in the form of latex is confirmed by the very small magnitude of the volume and temperature changes accompanying coagulation. With gradual increase in the acidity of the latex it is known that a range of concentration over which coagulation occurs is followed by one of increased stability and this again is succeeded by a range effecting coagulation. The first region of coagulation is an isoelectric region, while the second region of coagulation is due to the anion of the acid employed.

The author makes the suggestion that all the phenomena of coagulation of normal latex are explicable on the theory that the rubber globules have a protective layer of protein matter which has an isoelectric region at the first coagulation point of normal latex. (p_H 4.9 to 5.4). Natural coagulation is attributed to acidity which is developed by bacterial action and not to an enzyme. Acids such as boric and hydrocyanic which are unable to raise the acidity of latex to p_H equal to 5-4 do not cause coagulation. Acetic acid can develop this degree of acidity and so effect coagulation, but it is unable to give a degree of acidity which is sufficient for the attainment of the higher range of stability beyond p_H equal to 2.5. Oxalic acid on the other hand is sufficiently acidic to enable the range of stability to be reached but not passed.

Only still stronger acids are capable of effecting coagulation at the second stage either by their greater acidity or by their high anion concentration. Preservatives may act by preventing any rise of or by lowering the hydrogen ion concentration, by removing salts, such asoxalates, which may act as coagulants by suppressing bacterial action, by rendering the protein less easily coagulable, or by reducing the surface tension. *Malayan Agricultural Journal*, volume 11, pages 348-370.

A New Accelerator of Vulcanization

Investigations of accelerators for vulcanizing rubber, concerned especially with compounds of the guanidine type, have led the author to a study of 1, 4-diphenylendoanilinodihydrotriazole



known in commerce under the name of *nitron* on account of its very marked property of precipitating NO_3 ions in very dilute solutions even in the presence of nitrites.

The nitron used in the experiments was in the form of a yellow, extremely light powder with a melting point of 187-189°C. When burned it evolved an odor resembling that of triphenylguanidine, and at the end that of diphenylguanidine. It has already been described in the literature as a strong base.

Tested in comparison with triphenylguanidine with equal parts of sulphur and with the same temperature and time of vulcanization, the following results were obtained:

1) Nitron has an accelerating power almost identical with that of triphenylguanidine.
2) On adding to nitron a small amount of a suitable compound which liberates ammonia when heated (ammonium carbonate, etc), its accelerating power is so greatly increased that it approaches that of diphenylguanidine.
3) A similar increase in accelerating power is obtained with triphenylguanidine, on addition of the same ammoniacal compounds.
4) Nitron is a good accelerator, like triphenylguanidine, in the absence of zinc oxide.

—Egidio Romani, Research Laboratory Societa Lombardo Gomma, Milano, Italy, writing in *Le Caoutchouc & la Gutta-percha*, Vol. 21, p. 12111 (Mar. 15, 1924).

Waterproofing Articles with Latex

Woven fabrics, felt, paper, or similar fibrous substances are impregnated with latex in a suitable mangling or beetling machine and are subsequently treated in a machine of similar type with a hot coagulating liquor, such as dilute acetic acid or alum. If desired, the latex may be previously mixed with agents for subsequent vulcanization, and also treated so as to render the proofing "mellow." After coagulation and while the rubber is still plastic, the material is rolled or calendered so as to produce a smooth surface and impart suppleness. British Patent No. 211,188.

RUBBER STATISTICS

Import **Production** **Export**

Exports of Rubber Goods from U. S.—May, 1924

Compiled from Statistics Furnished by the Department of Commerce

RUBBER BELTING, HOSE, PACKING, AND THREAD.

	Rubber Belting		Rubber Hose		Rubber Packing		Rubber Thread	
	Pounds	Dollars	Pounds	Dollars	Pounds	Dollars	Pounds	Dollars
Totals	374,775	227,831	354,692	146,959	136,844	65,489	84,958	91,570

PNEUMATIC CASINGS AND PNEUMATIC TUBES

	Pneumatic Casings				Pneumatic Tubes			
	For automobiles		Other		Automobiles		Other	
	Number	Dollars	Number	Dollars	Number	Dollars	Pounds	Dollars
Totals	125,120	1,574,735	4,042	14,063	94,682	187,300	3,820	3,733

HARD RUBBER GOODS

	Battery jars and Accessories		Other Electrical Supplies		Other hard rubber goods	
	Pounds	Dollars	Pounds	Dollars	Pounds	Dollars
Totals	20,499	7,019	7,950	4,915	49,644	59,519

WATERPROOFED AUTOCLOTH, RUBBERIZED FABRICS, ETC.

	Waterproofed Autocloth and Rubberizer Fabrics		Waterproofed Clothing	
	Sq. yards	Dollars	Pounds	Dollars
Totals	174,151	105,709	146,383	138,618

SOLID TIRES, ACCESSORIES AND REPAIR MATERIALS

	Solid Tires					
	For Automobiles and Motor Trucks		Other		Accessories and Repair Materials	
	Number	Dollars	Number	Dollars	Pounds	Dollars
Totals	9,904	248,624	169,753	39,379	113,072	45,768

RUBBER FOOTWEAR AND SOLES AND HEELS.

	Boots		Shoes		Canvas shoes with rubber soles		Rubber soles and heels	
	Pairs	Dollars	Pairs	Dollars	Pairs	Dollars	Pounds	Dollars
Totals	15,280	46,613	64,536	55,803	261,704	216,952	257,768	80,100

SUNDRIES, BATHING CAPS, RUBBER BALLS

	Water bottles and fountain syringes		other Druggists' Rubber Sundries		Bathing caps		Toy rubber balls and balloons	
	Number	Dollars	Pounds	Dollars	Dozen	Dollars	Pounds	Dollars
Totals	13,867	12,168	52,666	68,535	17,157	28,667	87,622	90,734

British Rubber Statistics

Movements of all kinds of Rubber to and from the United Kingdom as per Board of Trade Returns During April, 1924

IMPORTS

From	—April—		Four months ended April			
	1924	1923	1922	1924	1923	1922
Straits Settlements & F.M.S.	3,071	3,591	3,318	12,867	15,205	13,050
Ceylon and British India	1,093	982	893	4,900	5,344	4,981
Dutch East Indies, etc.	393	528	814	2,555	2,228	2,360
Brazil and Peru	189	71	363	1,328	1,246	1,161
Other Countries	151	171	23	756	572	185
Total Tons	4,897	5,343	5,411	22,406	24,595	21,737

EXPORTS

To	—April—			Four months ended April		
	1924	1923	1922	1924	1923	1922
United States of America	966	6,415	1,011	11,142	14,746	12,400
Canada	169	312	16	1,270	1,019	201
France	1,623	1,718	825	6,349	5,591	4,909
Belgium	131	176	155	729	628	503
Italy	528	454	249	1,742	1,431	834
Spain	25	9	19	141	82	156
Germany, Austria, Hungary	856	596	656	2,173	2,318	3,201
Russia	—	—	—	399	—	—
Sweden, Norway & Denmark	119	33	65	607	282	192
Other Countries in Europe	128	15	28	260	331	355
Other Countries	24	68	32	142	113	62
Total Tons	4,569	9,796	3,056	24,954	26,541	22,813

Landings, Deliveries and Stocks in London and Liverpool as returned by the Warehouses and Wharves during the month of April

	Landed for April	Delivered for April	—Stocks 30th April—		
			1924	1923	1922
London					
Plantation	4,131	5,206	54,252	58,396	68,508
Other Grades	6	—	107	100	129
Liverpool					
Plantation	290*	321*	5,081*	6,165*	7,089*
Para and Peruvian	545	340	790	319	985
Other Grades	—	—	210	237	431
Total Tons London and Liverpool	4,972	5,867	60,440	65,217	77,142

*Official Returns from the six recognized Public Warehouses.

Statistics of the Rubber Producing Regions of the Middle East

Exports of Crude Rubber from British Malaya

(Figures in long tons)

Month	1924			1923		
	Gross	Net	Reexports	Gross	Net	Reexports
January	23,848	14,981	8,867	22,870	18,513	4,357
February	19,395	11,955	7,440	19,907	15,819	4,088
March	22,293	14,025	8,268	23,646	18,538	5,108
April	20,551	12,642	7,909	24,009	18,620	5,389
Total	86,087	53,603	32,484	90,432	71,490	18,942

Exports of Crude Rubber from Ceylon

(Figures are in long tons)

Month	1924	1923
January	3,068	3,897
February	3,652	3,407
March	4,054	4,623
Total	10,774	11,927

Exports of Crude Rubber from Netherlands East Indies—1924

(Figures in long tons)

Month	Java and Madeira	Sumatra	Borneo	Celebes	Total
January	3,267	8,048	2,179	17	13,511
February	3,341	7,897	2,017	15	13,270
Total	6,608	15,945	4,196	32	26,781

Exports of Crude Rubber from Netherlands East Indies—1923

Month	Java and Madeira	Sumatra	Borneo	Celebes	Total
January	2,145	6,945	1,873	10	10,973
February	3,858	4,748	1,501	—	10,107
Total	6,003	11,693	3,374	10	21,080

Indo-China

The quantity of rubber exported from Indo-China for the months of January and February, 1914, was 797 long tons—a gain over 1923 of 73 tons.

THE MARKET PLACE

is open

Turn to Page 273

Importations of Crude Rubber into the United States During May, 1924

Figures compiled by The Rubber Association of America, Inc.

(Estimated net weights—long tons.)

PLANTATIONS

From	Tons
Batavia	1,559
Belawan-Deli	2,142
Colombo	1,832
Japan and Others	121
Liverpool	244
London	1,688
Malacca	1,138
Penang	2,030
Pt. Swettenham	1,052
Singapore	9,454
Sourabaya	1,206
	22,466

AFRICANS

From	Tons
Antwerp	5
Bordeaux	44
Hamburg	4
Liverpool	4
Marseilles	13
	70

CENTRALS AND GUAYULE

Centrals (Mexico and Central America)	17
Guayule (Mexico)	185
	202

PARAS

Iquitos	7
Manoas	791
Para	378
	1,176

GUMS, WASTE RUBBER, ETC., IMPORTED FROM VARIOUS SOURCES

	Tons		Tons
Waste	104	Miscellaneous Gums	139
Balata	55		

COMPARISON 1923-1924

	MAY-1923	MAY-1924	Total Importations 5 months ending, MAY 31 1923	1924
Plantations	34,609	22,466	147,373	130,501
Paras	1,042	1,176	6,856	5,074
Africans	333	70	2,331	1,245
Central	24	17	227	240
Guayule	167	185	309	416
Manicoba and Matto Grosso	9½	—	9½	—
	36,184½	23,914	157,105½	137,476

Arrivals Plantations for May, 1924, Showing Ports of Origin and Arrival

FROM	ARRIVED AT	TONS
Batavia	Boston	42
Batavia	New York	1,517
Belawan-Deli	New York	2,142
Colombo	Boston	38
Colombo	New York	1,794
Japan and Others	New York	121
Liverpool	New York	244
London	Boston	13
London	New York	1,675
Malacca	Boston	32
Malacca	New York	1,106
Penang	Boston	32
Penang	New York	1,998
Port Swettenham	Boston	53
Port Swettenham	New York	999
Singapore	Baltimore	849
Singapore	Boston	397
Singapore	Los Angeles	306
Singapore	New York	7,873
Singapore	Philadelphia	29
Sourabaya	New York	1,206
		22,466

ARRIVALS OF PLANTATIONS BY PORTS

Atlantic Ports		
Baltimore	849	
Boston	607	
New York	20,675	
Philadelphia	29	
		22,160
Pacific Ports		
Los Angeles	306	
		306
		22,466

Rubber Reducing Garments Being Marketed

(*Continued from Page* 257)

ing the Secretex Co. together with several other corset manufacturers, with the rubber material for their reducing girdles. Hodgman, Kleinert, Seamless, Miller, Faultless, Omo, Davol, Bauman and others are also supplying rubber material. Although no definite information is available, it is believed that several rubber concerns in the Akron district are contemplating entering this new field in view of the large demand for this article. Among the other manufacturers of the rubber reducing girdle are The Biltwell Brassiere Co., The Standard Corset Co.; Crown Corset Co.; La Resista Corset Co.; Treo Co., Inc.; Silk Maid Corset Co.; Gage-Down Co.; The Strouse Corset Co.; Strouse, Adler & Co.; Model Brassiere Co.; Princess Corset Co.; Jackson Corset Co.; Vesta Corset Co.; Bauman Rubber Co.; Peerless Corset Co. and Gage Downs Co.

Reports from leading cities show that wonderful sales records are being established on these garments. In Washington sales are increasing rapidly and very few returns are reported on account of splitting rubber. The plain pink all-rubber corset is leading by 3 to 1 over the rubber and fabric garments. In Baltimore many stores have been forced by demand to order complete lines and sales in Philadelphia have been characterized as most gratifying. In Kansas City sales are said to be phenomenal, one store selling over 2500 in the last two months. Other cities, both in the East and West also report satisfactory sales with little or no returns.

The following opinions of corset buyers throws much interesting light of the reaction of the wholesale and retail ends of the corset industry[2]:

"The business we have done," says a Baltimore buyer, "on these new rubber reducing corsets since we introduced them several months ago has been so good that we are very well satisfied. Women like them, there has been a great demand for them and they actually do reduce. They are too new on the market yet to have any reorders on them, since the first ones bought are still being worn. Of course it is impossible to say whether they will be a permanent institution in the corset industry, although they seem to be becoming more and more popular. As for their being healthy or otherwise that depends entirely on the wearer. Some skins are naturally more sensitive than others, and where one may reduce with no discomfort another's skin may become irritated."

A buyer from Chicago says: "Undoubtedly these rubber corsets do reduce, but the question is, will women be willing to be uncomfortable to become slimmer, or will they be too uncomfortable with this corset to make the sacrifice for fashion's sake? I personally think it is only a fad, that this corset takes very much now because of its novelty and its extensive advertising, but I don't think it will be permanent. There are complaints about its being the cause of 'breaking out' on the skin and colds in the kidneys. Still, women nowadays don't care how uncomfortable they are as long as they attain slenderness.

"The great demand for these corsets causes us to put them in our department, though I personally do not like them. But one important thing it will do is to stimulate the general corset business to such an extent that I predict next season to be the biggest corset season in years."

A Cleveland buyer says: "We've only had these new rubber corsets in our departments a few days and we haven't as yet advertised them and already we have sold quite a number. Whether they will remain or not is difficult to say, but I have no doubt that the corset business in general will benefit. They are extensively advertised, women are reading about them, and this will bring women back into the corset department, which is what we want."

It is evident from the above opinions quoted that the majority of corset buyers are still very skeptical about the outcome of the new garment and very few seem to be impressed with its value, but there is one feature on which they all agree; namely, that it will be of great help in stimulating the corset trade, and we hope that it will be as equally helpful to the rubber trade as well.

[2] From May issue *Corset and Underwear Review*.

MARKETS

Cottons and Fabrics

NEW YORK, June 30, 1924

The tone of the market has shown a decided improvement over the beginning of this month, with good activity reported in most directions. On the 18th prices showed a considerable advance over the previous night's closing, the spot position quoted at from 34 to 47 points higher. Future contracts also advanced from $1.75 to $2.50 a bale. More favorable weather reports as given out by the Department of Agriculture, however, failed to draw out sellers as was the case on June 2nd and, although professional selling was noted to a considerable extent in some quarters, the actual weight of contracts proved insufficient to depress values.

On the 19th the market took on another slight advance in prices but increased selling brought about a reaction of one quarter cent. A certain amount of July liquidation prior to notice day was absorbed bringing the July position approximately 270 points about the October level.

Large Exports Reported

Statistics at the end of the week showed that exports for the season passed the 5,500,000 mark, or about 930,000 bales in excess of last year to date, while stock in licensed warehouses here aggregated 51,000 bales, compared with 58,000 the first of the month and 86,000 bales last year. Also that textile mills consumed 413,649 bales of cotton during May as compared with 480,000 in April and 620,854 in May, 1923, while stocks of cotton at the mills and warehouses on May 31st totaled 2,284,489 bales as compared with 3,214,386 bales on hand at the same time last year.

An item of interest in the cotton situation is the recent survey of cotton acreage in June in the United States. The survey tentatively places the total acreage for the present season at 41,018,000 acres, or in excess of that of any previous season. This figure represents an increase of six per cent for the whole South. Pointing out that the size of the 1924 crop depends mainly upon the yield per acre, which of course is influenced to a great extent by other considerations, this authority computes that on the basis of last year's yield of 130.6 pounds per acre the crop on the present acreage would be 10,713,901 bales. It is expected that the present year's crop will be in excess of this figure.

Prospects for the coming cotton crop are viewed with more optimism than has been displayed in some time. There is no doubt that perfect weather will be needed during the remainder of the summer because of the unusually wet weather experienced up to this time, but as was the case in 1920 bad weather followed by favorable weather made that year's crop a banner one and similar conditions may exist this year.

In the New England cotton markets good activity on both old and new crop cotton has been reported. There has been for some time considerable talk about shutdowns among the mills but these rumors have not as yet been confirmed. Considerable astonishment was caused in the trade here by the reports that many New England yarn mills were selling out a large proportion of their old crop stocks for it was the general belief that the stocks in mill warehouses would not be able to withstand this drain in their already depleted condition. This causes many here to wonder if the spinners contemplated being idle during August and September.

On the 23rd trading took on a more active turn due largely to the favorable weather reports in the cotton belt, but prices were held at a lower level. The July position was heavily liquidated and as a result declined to 28c. The market eased off from 47 to 52 points during the day.

On the above date an inquiry was received by the Commerce Department from the Trade Commissioner at Rio de Janeiro, Brazil, for quotations on from ten to twelve thousand bales of cotton, involving a sum of approximately one million dollars. The grades called for in the inquiry were middling and strict middling or middling and low strict middling of seven eights to one inch staple for shipment during July. Inasmuch as recent statistics have shown that cotton stocks in Brazil are unusually low this year there are many who attach the utmost importance to this contemplated transaction indicating that it may possibly be the forerunner of considerable cotton export to Brazil. However, to date nothing definite can be learned.

On the 24th the market showed an advance during the day of from thirty to forty points with closing quotations ten to twenty points higher than those of the preceding day. This rally was brought about by heavy covering of back cotton due to private crop reports which showed less gain in crop conditions than was expected by the majority of operators. Foreign markets which eased off during the early morning trading reacted in sympathy with the local markets and at the close exhibited a steady undertone. Sales on the July position were reported at 300 points above the October price and a covering movement developed in new crop positions. On the 26th private reports were received giving the condition of the crop at 68.4 indicating a yield of 11,300,000 bales. July again showed an advance of two cents bringing the price for this position up to the high level of 30 cents.

A shutdown to take place between the twenty-third of June and the fourteenth of July was announced by the Lowell plant of the Massachusetts Cotton Mills. The reason of the shutdown was explained by officials of this company as due to lack of orders. It was reported that 2,800 persons are employed in these mills when running on full time basis.

New Fabrics Plant Organized

The Belamose Corporation capitalized at two million dollars, one million of which is paid in, and to engage in the manufacture of artificial fabrics, silk, wool, straw and horsehair, for both domestic and export trade, has filed papers for incorporation in the office of the Secretary of State at Hartford, Conn. Three factory buildings are now being erected at Rockyhill. It is hoped by officials that these plants will shortly be in operation.

Quotations of this date follow:

	Open	High	Low	Close	Close June 16
July	28.95	29.20	28.82	29.12	28.80
October	24.88	25.20	24.70	24.86	25.98
December	24.17	24.32	24.02	24.18	25.26
January	24.00	24.01	23.83	23.92	24.98

TIRE FABRICS

Little consuming interest has found its way into this market for the past two weeks and what orders were placed were for the most part for such small quantities that they are hardly worthy of comment in reviewing the condition of the market.

Inasmuch as fabric and rubber are the two chief commodities used by the tire manufacturers, conditions in these two markets are very similar when based on existing conditions in the tire industry. From all sides comes the same complaint. Tire companies will not and in many cases can not buy beyond their present requirements and those mills who were not fortunate to have cost plus contracts on their books find it almost impossible to secure sufficient business to keep their plants running. Recent reports state that several mills are closing down this week until after the holidays and rumors of more permanent shutdowns are prevalent daily throughout the trade.

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Chemicals and Compounding Ingredients

THE INDUSTRIAL CHEMICAL MARKET—NEW YORK, July 1, 1924—Prices remain nominally unchanged on most items in this market from quotations published in our last issue. The majority of dealers report a fair volume of business done for the account of manufacturers during the past two weeks, with shipments in some cases exceeding anticipations. Buyers still continue to use a hand-to-mouth policy when purchasing their requirements but the trade as a whole reports a steady demand abroad in the market. The curtailment in production, which now exists in the manufacturing industry, has had little affect on the chemical market and the trade as a whole is reasonably optimistic as regards business during the remainder of the year.

ACCELERATORS

Organic

Aldehyde ammonia, crystals	lb.	$ .90 @	.95
Aniline oil, drums	lb.	.16 @	.17
Diphenylguanidine	lb.	1.10 @	1.15
Excellerex,	lb.	.35 @	.40
Formaldehyde-Aniline	lb.	.50 @	—
Hexamethylene-tetramine	lb.	.82 @	.85
Paraphenylenediamine	lb.	1.55 @	—
Super-Snlphur No. 1	lb.	.50 @	.60
Super-Sulphur No. 2	lb.	.25 @	.35
Tetramethyl—Thiuramdisulphide	lb.	6.00 @	—
Thiocarbanilide, kegs	lb.	.28½ @	.29
Vulcocene	lb.	.35 @	—

Inorganic

Lead, sublimed blue	lb.	.11 @	—
Lead, white	lb.	.09¾ @	—
Litharge, domestic	lb.	.10 @	—
Lime, Superfine	lb.	.02 @	.04
Magnesia, calcined, light,	lb.	.24 @	.26
extra light	lb.	.45 @	.60
heavy	lb.	.08 @	.08½

COLORS

Blacks

Arrow "Aerfloted"	lb.	.09½ @	.13
Bone Black	lb.	.05½ @	.07½
Carbon "	lb.	.09 @	.12
Drop "	lb.	.07½ @	.10
Ivory "	lb.	.15 @	.45
Lamp "	lb.	.12 @	.40
Micronex	lb.	.09 @	.14

Blues

Cobalt	lb.	.52 @	.56
Prussian	lb.	.72 @	.75
Ultramarine	lb.	.42 @	.56

Browns

Iron oxide	lb.	.02¼ @	.06¼
Sienna, Italian,	lb.	.06 @	.14½
Umber, Turkey,	lb.	.04 @	.04½
Vandyke, domestic	lb.	.03½ @	.04

Greens

Chrome, light	lb.	.30 @	.31
medium	lb.	.32 @	.35
dark	lb.	.35 @	.38
Commercial	lb.	.10½ @	.11

Reds

Antimony crimson, 15/17 F.S.	lb.	.42 @	.50
sulphur free	lb.	.45 @	.60
golden, 15/17 F.S.	lb.	.20 @	.22
calcium and sulphur free	lb.	.40 @	—
red sulph.15-17 F.S.	lb.	.16 @	.20
Indian, English	lb.	.11 @	—
Para toner	lb.	.95 @	1.00
commercial	lb.	.15 @	.18
Red Oxide, reduced	lb.	.08 @	.12
pure	lb.	.12 @	.14
Toluidine toner	lb.	2.00 @	2.10
Venetian red	lb.	.02 @	.05½
Vermillion, quicksilver, English	lb.	1.35 @	1.45
domestic	lb.	.15 @	.25

Whites

Albalith	lb.	.07 @	.07¼
Aluminum bronze	lb.	.55 @	—
Lithopone Azolith	lb.	.06¼ @	.06¾
Zinc Oxide—American Process XX red	lb.	.07¾ @	.08¼
Kadox, black label, bags, cars		.11⅝ @	.11⅞
blue " " "		.10⅝ @	.10⅞
red " " "		.09⅝ @	.09⅞
American Azo: ZZZ (lead free)	lb.	.07¾ @	.08¼
ZZ (under 5 per cent leaded)	lb.	.07 @	.07½
Z (8-10 per cent leaded)	lb.	.06¾ @	.07¼
Zinc Oxide—French Process White seal	lb.	.12 @	—
Green seal	lb.	.10¾ @	—
Red seal	lb.	.09¾ @	—

Yellows

Chrome, light		.17 @	.18
dark and medium	lb.	.17 @	.18
Cadmium Sulphide	lb.	1.50 @	1.60
Ocher, French	lb.	.02¼ @	.02½
domestic	lb.	.02 @	.02½

COMPOUNDING INGREDIENTS

Aluminum Flake	ton	25.00 @	40.00
hydrate light	lb.	.17 @	.18
Ammonia carbonate,	lb.	.13 @	.14½
Asbestine	ton	13.00 @	15.00
Barium carbonate,	ton	68.00 @	70.00
Barium Dust	lb.	.05 @	.06
Barytes southern off-color,	ton	15.00 @	18.00
Western prime white	ton	22.00 @	23.00
Imported	ton	28.00 @	33.00
Basofor	lb.	.04¼ @	—
Blanc fixe, dry f.o.b. works	lb.	.03¾ @	—
Carrara filler	lb.	.01½ @	.02
Chalk, precipitated, extra light	lb.	.04½ @	.05
heavy	lb.	.03¼ @	.04
Clay, China, domestic,	ton	12.00 @	15.00
Dixie	ton	22.00 @	32.00
Blue Ridge	ton	12.00 @	25.00
Fossil flour	lb.	.03 @	.05
Glues, extra white	lb.	.22 @	.30
medium white	lb.	.20 @	.26
cabinet	lb.	.18 @	.28
cabinet low grade	lb.	.15 @	.18
common bone	lb.	.11 @	.14
Graphite flake, bbls.	lb.	.05 @	.09
amorphous	lb.	.04 @	.10
Infusorial earth, powdered	ton	60.00 @	—
bolted	ton	70.00 @	—
Liquid latex	gal.	1.25 @	1.35
Magnesia, carbonate	lb.	.08¼ @	.08¾
Mica, powdered	lb.	.07 @	.15
Rotten Stone (powdered)	lb.	.02½ @	.04½
Soapstone, powdered	ton	15.00 @	22.00
Starch, powdered	cwt.	3.27 @	3.54
Talc, domestic	ton	15.00 @	22.00
French	ton	20.00 @	25.00
French, high grade	ton	40.00 @	45.00
Italian	ton	50.00 @	55.00
Terra Alba	cwt.	1.75 @	1.90
Tripoli, white	lb.	.02 @	.02¼
Whiting, commercial	cwt.	.85 @	1.15
gilder's bolted	cwt.	1.10 @	1.20
English cliffstone	cwt.	1.50 @	—
Paris whiteAmerican	cwt.	1.25 @	1.50
Quaker	ton	13.00 @	15.00
Sussex	ton	8.00 @	16.00
Wood pulp XXX	ton	35.00 @	—
" " X	ton	25.00 @	—

MINERAL RUBBER

Genasco (factory)	ton	50.00 @	52.00
Granulated M.R.	ton	50.00 @	54.00
Hard hydrocarbon	ton	30.00 @	40.00
Soft hydrocarbon	ton	30.00 @	40.00
320/340 M. P. hydrocarbon (c. l. factory)	ton	45.00 @	50.00
300/310 M. P. hydrocarbon (c.l. factory)	ton	40.00 @	45.00
Synpro, granulated, M. R. (factory)	ton	55.00 @	70.00

SOFTENERS

Acids

Acetic, 28%	cwt.	3.12 @	3.37
Cresylic, 97%	gal.	.63 @	.70
95%		.61 @	.68
Muriatic, 20%	cwt.	.90 @	1.00
Nitric, 36 degrees	cwt.	4.25 @	4.50
Sulphuric, 60 degrees	ton	9.00 @	10.00
66 degrees	ton	14.00 @	15.00
Tartaric, crystals	lb.	.30 @	—

Alkalies

Caustic soda, 76%	cwt.	3.76 @	3.91
Soda ash, 58%	cwt.	2.04 @	2.19

Oils

Castor, No. 3, bbls.	lb.	.15 @	.15½
Chinawood, bbls.	lb.	.12¾ @	.13
Corn, crude, bbls.	lb.	.10¼ @	.10¾
refined	lb.	.12 @	.12¼
Cottonseed, crude		.09 @	—
Glycerine,	lb.	.16½ @	.17
Linseed, domestic	gal.	.88 @	—
Palm, Niger	lb.	.06½ @	.06⅝
Lagos	lb.	.07 @	.07¼
Peanut,domestic,crude	lb.	.12½ @	—
Petroleum, amber	lb.	.05½ @	—
dark, amber	lb.	.04½ @	.04⅞
Pine, steam distilled	lb.	.60 @	.65
Rapeseed, refined	gal.	.77 @	.78
blown	gal.	.96 @	.98
Rosin, first rectified	gal.	.40 @	.42
second rectified	gal.	.45 @	.47
Soya Bean		.11⅞ @	.12⅛
Tar, commercial	gal.	.30 @	.32

Resins and Pitches

Cumar resin, hard	lb.	.09 @	.10
soft	lb.	.09 @	.10
Parra M.R.	lb.	.06 @	.07
Tar Retort	bbl.	10.50 @	11.00
kiln burned	bbl.	10.50 @	11.00
Pitch, Burgundy	lb.	.65 @	.66
coal tar	gal.	.06 @	.08
pine	bbl.	5.50 @	5.75
Rosin grade K	bbl.	5.85 @	—
Shellac, fine orange	lb.	.58 @	.59

Solvents

Acetone, drums	lb.	.15 @	—
Alcohol, denatured, No. 1 bbls.	gal.	.50 @	.52
Benzol, 90%	gal.	.23 @	—
pure		.24 @	.25
Carbon bisulphide	lb.	.06 @	.07
tetrachloride	lb.	.07 @	.07½
Dimethylaniline	lb.	.35½ @	.37
Motor gasoline, steel bbls.	gal.	.20 @	—
Naptha, V. M. & P.	gal.	.19 @	—
Toluene	gal.	.31 @	—
Turpentine, spirits	gal.	.82 @	.83
wood	gal.	.74 @	.75

Waxes

Bayberry	lb.	.21 @	.22
Beeswax	lb.	.43 @	.45
Carnauba, No. 1	lb.	.40 @	.41
Ceresin, white	lb.	.10 @	.11
Montan, crude	lb	.06 @	.06½
Ozokerite, black	lb.	.26 @	.27
green	lb.	.28 @	.29
Paraffine	lb.	.04½ @	.04⅝
Sweet wax	lb.	.12 @	—

SUBSTITUTES

Black	lb.	.08 @	.14
White	lb.	.10 @	.16
Brown	lb.	.10 @	.15
Brown factice	lb.	.10 @	.15
White factice	lb.	.09½ @	.16

VULCANIZING INGREDIENTS

Black hyposulphite	lb.	.25 @	.26
Sulphur Chloride (drums)	lb.	.04 @	.05
Sulphur flour			
Commercial bags,	cwt.	1.35 @	1.70
" bbls.	cwt.	1.70 @	—
Superfine, bags,	cwt.	2.00 @	2.40
" bbls.	cwt.	2.40 @	—
100% pure, refined, bags	cwt.	2.25 @	2.55
bbls.	cwt.	2.50 @	2.80

Crude Rubber

NEW YORK, June 30, 1924

As we compare prices for crude rubber to-day with those of two weeks ago we find no actual change. However it is the general opinion among local dealers that this condition is not here to stay and during the next few months an easing off of prices will be seen. This is not a mere pessimistic attitude but is based on the present condition of many consumers.

Several weeks ago the Firestone Tire & Rubber Co. announced that they would furnish free rims and wheels with each set of balloon tires sold, this announcement being followed by a similar one from several other tire companies. Following this the Fisk Rubber Co. decided on a ten to twenty per cent cut on all tires. A similar policy was adopted on the 19th by the United States Rubber Co.

Along with this cut in tire prices another condition among the factories must be taken into consideration and one which will undoubtedly affect the crude rubber market. Statistics at the present time show a surplus of tires in the United States of approximately 18,000,000 while figures in the automobile industry based on the production of the first five months of 1924 show that 263,882 more vehicles will be produced this year over 1923, making a total output for 1924 of approximately 4,321,121 cars.

Although these latter figures would indicate better conditions in the automobile industry and an increased outlet for tires, adverse weather conditions and a late spring have kept a great majority of automobile drivers off the roads and tire dealers in nearly all sections of the country and especially in the agricultural districts, report a tremendous falling off in replacements.

In view of this fact many of the tire companies have been forced to adopt a curtailment policy which is seen in the fact that the Goodyear Tire & Rubber Co. which had a daily production during May of 30,000 tires is now turning out only 25,000 per day.

Recent advices from the Akron district, however, report that the tire manufacturers, due to the recent price cut and the necessity of curtailment, will not be paralyzed as was the case in 1923 when existing conditions were similar. Raw materials of both rubber and fabric are considerably cheaper, the excise tax on tires was cut by congress from 5 to 2½ per cent and in many cases the overhead cost in the factories has been cut below any previous level.

All these things have had the resultant affect upon the crude rubber market. With buyers refusing to make committments beyond their present requirements and with many of the local dealers showing no great willingness to sell many of the factories and assume credit risks owing to the general condition of the tire industry as a whole, the market is dull and inactive.

On the 13th the market eased off ¼c on all positions. Consumers showed some disposition to pick up a few small lots and sellers were inclined to make concessions in several instances. Spot was sold at 18¾c, with the London and Singapore markets reported to be dull in sympathy with this side. On the 14th which marked the end of the week spot was quoted nominally unchanged from the previous day at 18¾c with no buyers, this price denoting a drop in the market during the week of ¾c. This drop was attributed to several causes, the chief ones among which were, the slow movement of tires as reported by tire dealers, the lack of buying support on the part of the manufacturers and the necessity of the speculative element to sell in the market due to the lack of consuming interest. Despite these conditions, however, it is the general opinion that rubber will not decline very much below its present level in view of the present statistical position. The London market remained quiet and dull with Singapore easing off a farthing to 9⅝d due to speculators' endeavor to liquidate the future positions.

On the 17th after a ⅜c drop in prices on the previous day the market recovered a ⅛c with buyers displaying a fair amount of interest. Spot was sold in two directions at 18½c, Aug./Sept. at 18¾c and Oct./Dec. at 19⅛c in a fair quantity way. News of the tire cut on the 20th brought out many speculative sales with many concessions made on the part of sellers, but on the following day prices again firmed up slightly with no anxious sellers making their appearance in the market.

At the beginning of this week, as would be expected after the previous reaction, the market eased off to 18⅛c on the nearby position, but on the 25th due to heavy buying on the part of several dealers and with several sales reported made to factories for sizeable quantities, the market advanced from ½c to ⅝c with spot quoted in most directions at 18¾c. The Singapore market eased off to 9d buyers due to additional liquidation.

Recent reports coming from the Malayan Rubber Controller claim that the Stevenson plan now in operation is being fulfilled and that stocks in London, Penang and Singapore are being reduced to a considerable degree.

More news has been received relative to the forming of the Rubber Grower's Agency. It has been suggested that this Agency cooperate with the various rubber growers, each grower to be a shareholder. An approved scale of prices would be adjusted periodically to make rubber growing profitable and in order to maintain prices the output would be restricted. Also that all members would sell subject to settlement through the agency making it similar to the clearing houses in London and New York. However, nothing definite as yet has been decided.

The National India Rubber Company of Bristol announced on the 27th that it would close down its entire plant on the following day. It is anticipated, however, that the wire department will reopen on Aug. 4 while the shoe division, employing approximately 2,100 persons, will resume operations on Oct. 1. In addition to this shutdown, advices from the Akron district report that a number of the large consumers will undoubtedly close down during the coming week to enable inventories to be taken, which if done will not be inducive toward strengthening the tone of the crude rubber market. Quotations of this date follow.

Plantations—			
Ribbed Smoked Sheets.			
Spot	.18½	@	—
July	.18⅝	@	—
July-September	.18¾	@	—
Oct.-Dec.	.19¼	@	—
First Latex, crepe, spot	.19½	@	—
Amber Crepe No. 1, spot	.18½	@	—
" " No. 2,	.18¼	@	—
" " No. 3,	.18	@	—
" " No. 4,	.17¾	@	—
Brown Crepe, Rolled	.16¾	@	—
" " Clean, thin	.17⅞	@	—
" " Specky	.17	@	—
Scrap, Colombo No. 1	.14	@	—
Pontianac—			
Prime Pressed	.12	@	—
Palembang	.07½	@	—
Bangermassin	.07	@	—
Sarawak	.06¾	@	—
Paras—			
Up-river Fine	.21	@	—
" Medium	.18	@	—
" Coarse	.13	@	—
Islands, fine	.18	@	—
" medium	.17¼	@	—
" coarse	.11	@	—
Cameta	.12	@	—
Madeira Fine	.22	@	—
Acre Bolivian, fine	.21½	@	—
Cut Beni Bolivion, fine	.21½	@	—
Tapajos, fine	.18	@	—
Xingu Ball	.12	@	—
Caucho Ball—			
Upper, shipment	.12	@	.12¼
Centrals—			
Central, scrap, prime	.12¾	@	.13
Corinto, scrap	.12¾	@	.13
Esmeralda, sausage	.12¾	@	.13
Guayule, w and d	.22½	@	—
Africans—			
Benezuela, No. 1	.12	@	—
" No. 2	.11	@	—
Congo, upper, black	.18	@	—
" " red	.17½	@	—
Kassai, Prime Red	.16¾	@	—
Balata—			
Black, Columbia	.48	@	.52
" Cuidad	.60	@	.63
Surinam, sheet	.73	@	.74
Gutta Percha—			
Siak	.17	@	—
Red Macassar	2.80	@	3.00
Chicle—			
Mexican, Yucatan	.73	@	.75

LONDON MARKET

Standard Ribbed Smoked Sheets—	
Spot	10¼d
July	10¼
July-Sept.	10⅜
Oct.-Dec.	10¾

SINGAPORE MARKET

Standard Ribbed Smoked Sheets—	
Spot	9½d
July	9½
July-Sept.	9⅝
Oct.-Dec.	10

Scrap Rubber

NEW YORK, July 1, 1924

With consumers still on the short side of the market and continuing their hand-to-mouth as regards buying, the tone of the market for the past two weeks has been dull with prices nominally unchanged over previous quotations. Certain factors report that the low price quoted for crude rubber today is having its affect on the scrap market inasmuch as many consumers are finding it almost as cheap to use the crude as it is to use scrap. With a minimum of future contracts on their books the greater part of

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Cotton Markets

(Continued from Page 268)

Prices, however, have remained for the most part unchanged. Mills manufacturing goods from cotton bought at the present level in that market report that profit from sales is almost a thing of the past while others state that they are losing from two to three cents a pound on fabric sold at today's prices.

For carded peeler cord buyers for quantity can purchase this grade at 53c while less dependable credit risks are forced to pay up to 57c for this same quality. Carded Egyptian coming in for its share of interest is quoted at 64c by the majority of sellers, while in the market for Square Woven Fabric, prices are the same as those quoted for Cords.

On the 16th a fair consuming interest was reported to be abroad in the market with a fair number of sales made but for small quantities in most instances.

The recent cut in tire prices effected by the larger tire companies has had no visible affect on this market up to the present time. The trade as a whole had already discounted the cut in advance and it is the general belief that this cut will fail to stimulate sales to any extent but will, on the other hand, have the result of making the tire manufacturers more exacting as to price and the consequent shopping for the lowest prices possible to be obtained will follow.

In most quarters it is thought that most of the business ensuing during the coming months will be placed for the account of the smaller tire companies whose credit has prevented them from anticipating their future requirements, for it is understood that the large factors in the tire industry are fairly well tied up with cost plus contracts. With business now on the books hardly sufficient to carry them beyond July, mills are looking for some relief in the situation during October and November at which time the tire industry will undoubtedly be forced to cover for their 1925 requirements.

CORD FABRICS

Combed Sakellarides		**Nominal**		
Combed Peeler	lb.	**Nominal**		
Carded Peeler	lb.	.53	@	.56
Combed Egyptian uppers	lb.	.66	@	.67½
Carded Egyptian uppers	lb.	.61	@	.63

SQUARE WOVEN

17¼-ounce Egyptian uppers, combed	lb.	**Nominal**		
17¼-ounce Egyptian uppers, carded	lb.	.60	@	.62
17¼-ounce Sakellarides, combed	lb.	**Nominal**		
17¼-ounce Peeler, carded	lb.	.52	@	.55

Ducks—During the week ending June 14th little interest was manifested in the market on the part of consumers, but despite the fact that buyers for the most part are still confining their purchases to the nearby positions, sellers have maintained their prices well and few concessions have been made. One order for 100,000 yards of Army duck was noted at a price well representative of the day's market.

Reports of a hot wave in the West encouraged the trade as a whole to a considerable extent and tended to create a feeling among the mills that better business might be looked for in the near future. Adverse weather conditions during the past few months are considered one of the chief causes for the market's dullness, resulting in the necessity for many mills to seek occupation business and in many instances accept orders at a concession which condition does not go toward making a stable market.

Burlaps—During the past two weeks the market has assumed and retained a steady tone with the primary markets reporting a like condition. On the 20th of this month the market weakened due to an impression here in the trade that Calcutta had eased off but later in the day prices took an upward trend with 7½s and 8s two weeks away selling at 5.65 and 5.75 while 10½s on a higher basis were reported sold at 8.30 at which figure some goods were offered in the New Orleans market.

SHEETINGS

40-inch 2.50-yard	yd.	.16	@	—
40-inch 2.85-yard	yd.	.14	@	.14¼
40-inch 3.15-yard	yd.	.14½	@	—
40-inch 3.60-yard	yd.	.11⅞	@	—
40-inch 3.75-yard	yd.	.10½	@	.10¾
40-inch 4.25-yard	yd.	.09¾	@	.09⅞

DUCKS

Belting	lb.	.46	@	—
Hose	lb.	.46	@	—
Enameling	lb.	.44	@	.48
Shoe Ducks	lb.	**.48**	@	**.52**
Single filling		.21½	@	.23
Double filling	lb.	.23	@	.25

BURLAPS
(Carload Lots)

7½-ounce 40-inch		5.85	@	—
8 -ounce 40-inch		5.90	@	6.00
10 -ounce 40-inch		8.75	@	—
10½-ounce 40-inch		8.90	@	—

DRILLS

37-inch 2.75-yard	yd.	.14	@	—
37-inch 3.00-yard	yd.	.13½	@	—
37-inch 3.25-yard	yd.	.12½	@	—
37-inch 3.50-yard	yd.	**.12**	@	—
37-inch 3.95-yard	yd.	.10¼	@	—

OSNABURGS

30-inch 7-ounce		.14½	@	.15
40-inch 7-ounce		.16	@	—

Chemicals

Antimony—Speculative buying which resulted in a sharp advance in prices has apparently subsided inasmuch as recent cables report the market in a soft condition. Factors in the Chinese market indicated in cables that they expected an easing off in prices due largely to the hand-to-mouth buying policy which has been in force for some time.

Sulphur—The market for sulphur is reported as steady with good demand. Commercial Flour is quoted to-day at $1.35 to $1.70 per hundred pounds while superfine is selling at from $2.00 to $2.40. Little interest has been manifested by buyers in Sulphur Chloride which grade is quoted at from 4 to 5 cents.

Lithopone—A decline of one quarter cent featured this market during the past few days. Slight concessions continue to be made by sellers in some quarters. Many buyers, who up to this time have been holding back orders, anticipating a drop in prices, have entered the market and brisk trading has been reported. In bags, the price quoted to-day is 6¼c to 6½c per pound, while for barrels 6½c to 6¾c is the general asking price.

Scrap Rubber

(Continued from Page 270)

the business going forward at the present time is on old orders. Prices are as follows.

Auto tire peelings		**.00½**	**@**	**.00⅝**
Standard White auto	ton	**13.00**	**@**	**14.00**
Mixed auto	ton	**9.00**	**@**	**10.00**
Bicycle tires	ton	**6.00**	**@**	**7.00**
Clean solid truck tires		**.00½**	**@**	**.00⅝**
Boots and shoes		**.01⅝**	**@**	**.01¾**
Arctics, untrimmed		**.00⅝**	**@**	**.00¾**
Arctics, trimmed		**.00¾**	**@**	**.01**
Inner tubes, No. 1		**.03⅜**	**@**	**.03½**
Inner tubes, compounded		**.01¾**	**@**	**.02**
Inner tubes, red		**.01¾**	**@**	**.01⅞**
Battery jars, clean hard rubber		**.00⅞**	**@**	**.01**
Air Brake Hose	ton	**10.00**	**@**	**11.00**
Rubber Hose	ton	**7.00**	**@**	**8.00**

Reclaimed Rubber

NEW YORK, July 1, 1924

Dealers in this market report a fair amount of business placed for the account of consumers. The tone of the market is steady but prices remain unchanged in most directions. Little activity is expected to take place during the next two weeks inasmuch as not a few plants are closing down preparatory to taking inventories. Prices are as follows:

Floating Tube	**.14**	**@**	**.14¼**
Friction, uncured	**.18½**	**@**	**.19**
Boots and Shoes (unwashed)	**.09**	**@**	**.09¼**
Boots and Shoes (washed)	**.12½**	**@**	**.13**
Mechanical	**.09**	**@**	**.09½**
Hose	**.09½**	**@**	**.10**
Tires, truck	.07¾	@	.08
Tires, auto, black	.10	@	.10½
Black (washed)	**.10**	**@**	**.10½**
White	**.13¼**	**@**	**.13¾**
Dark Gray	.09¼	@	—
Light Gray	.10¾	@	—

New Incorporations

FLORIDA

Royer Rubber Patch Co., Inc. Capital $10,000. To manufacture and deal in all kinds of rubber goods. Incorporators, W. G. Seals, president; H. H. Royer, vice president; D. B. Vincent, secretary and treasurer. Principal office, Jacksonville, Fla.

NEW YORK

Maynarty Rubber Co. Capital $300,000. Principal office, New York, N. Y.

OHIO

Mainardy Rubber Co. Capital $300,000. To deal in rubber tires, tubes, etc. Principal office, Dover, Ohio.

Rubber Export Co. Capital $10,000. To buy, sell, export and import rubber products. Incorporators, W. L. Willkie, N. O. Mather, F. G. Kline, L. A. Martin and G. N. Neal, all of Akron. Principal office, Akron, Ohio.

TEXAS

White Lion Rubber Works. Capital $15,000. To manufacture tires. Incorporators, H. H. Theis, Y. F. Hopkins, H. G. Garnert and others. Principal office, Taylor, Texas.

WASHINGTON

Western Rubber Co. Capital $50,000. Incorporators, Charles E. Nienhuis and Josiah Thomas. Principal office, Kent, Wash.

WISCONSIN

Gillette Tire & Rubber Co. Capital, 500 shares without par value. Incorporators, Chauncey E. Blake, Ernest H. Pett and Jane Martin. Principal office, Eau Claire, Wis.

Hood Rubber Products Co., Inc. Massachusetts corporation. Capital $1,000,000. Wisconsin agent, Ralph W. Jackman. Principal office, Madison, Wis.

SURRENDER OF AUTHORITY

General Asbestos & Rubber Co., North Charleston, South Carolina.

On the Opposite Page

The MARKET PLACE opens its doors!

This new section, which will be a regular feature in every issue, offers all our readers a conveniently arranged guide to all the leading firms in the industry who have machinery, chemicals, fabrics, rubber or services to offer.

Not only does this section list the name and city location, but it furnishes you with the complete name and street address and a brief description of the product or material listed.

The MARKET PLACE will be found a handy medium of reference when you are seeking the leaders in the rubber industry. Use it freely for you may be assured of courteous and prompt attention to all your inquiries. The firms listed here are the most progressive in the industry, and deserve your complete support.

To Manufacturers Desiring to Reach Rubber Buyers --

The MARKET PLACE offers every firm selling to the rubber industry an opportunity of representation with display advertising in a new section which has been 'sold' to the readers of THE RUBBER AGE by letter and other publicity. The industry will refer to this section regularly because of the ease of finding any article wanted and of course will expect to find your name listed with the leaders in the field.

Note particularly how easy it is to find any head in this section. Then note the character of firms represented. And then consider that the cost is only $5 an issue and you'll realize the great economy and advantage of being listed in The MARKET PLACE.

A blank is printed for your convenience in this issue. It will be found on the inside back cover. Fill it in, attach your copy and a proof will be sent you within a few days. *Now* is the time to act!